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ALLOCATION OF RESOURCES IN THE SOVIET UNION AND CHINA—1984

HEARINGS

BEFORE THE

SUBCOMMITTEE ON INTERNATIONAL TRADE, FINANCE, AND SECURITY ECONOMICS

OF THE

JOINT ECONOMIC COMMITTEE CONGRESS OF THE UNITED STATES

NINETY-EIGHTH CONGRESS

SECOND SESSION

AND

NINETY-NINTH CONGRESS

FIRST SESSION

PART 10

EXECUTIVE SESSIONS

NOVEMBER 21, 1984, AND JANUARY 15, 1985

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[2] Committee and subcommittee membership as of Jan. 15, 1985.

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ALLOCATION OF RESOURCES IN THE SOVIET UNION AND CHINA—1984

WEDNESDAY, NOVEMBER 21, 1984

CONGRESS OF THE UNITED STATES,
SUBCOMMITTEE ON INTERNATIONAL TRADE,
FINANCE, AND SECURITY ECONOMICS
OF THE JOINT ECONOMIC COMMITTEE,
Washington, DC.

The subcommittee met, pursuant to notice, at 10:05 a.m., in room SD-562, Dirksen Senate Office Building, Hon. William Proxmire (vice chairman of the subcommittee) presiding.

Present: Senator Proxmire.

Also present: Richard F. Kaufman, general counsel.

OPENING STATEMENT OF SENATOR PROXMIRE, VICE CHAIRMAN

Senator PROXMIRE. This is a classified hearing.

The subcommittee will come to order. In my letter to Director Casey inviting testimony in this year's hearing on the allocation of resources in the Soviet Union, I asked that there be some discussions of the apparent economic recoveries taking place in those two countries and the recent defense spending trends. In fact, it has been barely noted in the press that economic performance in the Soviet Union has improved since the beginning of 1983, despite frequent references in the West to the stagnation and nearly insurmountable domestic problems facing the Soviet leadership.

Considerable attention has been paid to the resurgence in China and the apparent links between economic reforms and improved performance in the country.

There are important and welcome developments and interest in them is well placed.

On the other hand, it would be foolish to ignore what is happening in the Soviet Union. If there is a recovery, we need to know that, and we need to understand as best we can, the reasons for it.

Too often, Americans seem to be interested only in the bad news about the Soviet economy. Economic setbacks often make the news, while economic successes seem to be ignored. The problem with this attitude is that it distorts our comprehension of what is going on in the Soviet Union and may also affect our policies.

The last thing we want to do is to underestimate the economic strength of the Soviet Union, our potential adversary.

A part of the bad news phenomenon seems to be that a lot of attention is paid to reports of the Soviet military buildup, especially when it can be shown that defense spending is increasing. Evidence

that portions of the Soviet defense budget may be declining, that there has been little, if any, growth in military procurement since 1977, and that the overall rate of growth of Soviet defense has slowed appreciably has not generally been noted in Washington.

I want to welcome Robert Gates, Chairman of the National Intelligence Counsel and Deputy Director for Intelligence of the Central Intelligence Agency.

Mr. Gates, if you will introduce your associates, you may proceed to your presentation, and then I'll have some questions.

STATEMENT OF ROBERT GATES, DEPUTY DIRECTOR FOR INTELLIGENCE, CENTRAL INTELLIGENCE AGENCY, ACCOMPANIED BY JAMES NOREN, CHIEF, SOVIET ECONOMY DIVISION; JOSEPH LICARI, CHIEF, ECONOMETRIC ANALYSIS DIVISION; AND DEAN CARVER, ANALYST, CHINA DIVISION

Mr. GATES. Thank you, Senator Proxmire.

Let me begin by expressing my pleasure at being invited again to testify before this committee.

I am accompanied today by Joe Licari, Chief of the Econometric Analysis Division of our Office of Soviet Analysis, James Noren, Chief of our Soviet Economy Division in that office, and Dean Carver from our China Division of the East Asia Office.

I'd just like to say at the outset that I appreciate the Senator's generosity and willingness to reschedule this hearing until today because of a conflict, and also apologize for the lateness with which we got the prepared statement to the committee. We were attempting to take into account, up to the last minute, remarks made by General Secretary Chernenko at last Thursday's Politburo meeting.

This marks our 11th year that we have reported on military and economic developments in the U.S.S.R. and China. In our testimony over the past few years, we have indicated that the Soviets have been passing through a period of especially low growth, as a result of disruptions in industry, transportation, and a series of poor harvests. We reported economic growth had fallen below 2 percent for 3 consecutive years, 1979, 1980, and 1981, in part, because of these disruptions, but also because of longer run trends involving slow growth in the labor force, rising raw material costs and sluggish productivity trends. This growth rate compared to 5 percent in the late 1960's and early 1970's.

ASSESSMENT OF SOVIET ECONOMY

We have submitted to your subcommittee a prepared statement for the record detailing the economy's performance in 1983–84 and reviewing Soviet spending on defense, investment, and consumption during this period.

In brief, the Soviet economy in 1983, and so far in 1984, has been performing somewhat better than it did in the late 1970's and early 1980's. GNP growth in 1983 was about 3 percent, reflecting gains both in agriculture and industry. Industrial output will register another good gain this year, although there are some signs that the pace has weakened. Because of problems in agriculture, however, particularly a disappointing harvest, overall growth of GNP in 1984 will drop back closer to 2 percent.

The better performance on average over the last 2 years leaves us with a mixed outlook for the rest of the decade. On balance, we continue to believe that overall GNP growth for the rest of the decade will remain substantially below the relatively high rates of the late 1960's and early 1970's. This will provide tthe leadership with little relief, as it searches for ways to devote more resources for both defense and consumption without sacrificing industrial modernization.

I would like first to summarize performance in the major sectors, then examine the factors which contributed to the mild recovery, and last, discuss the reasons that we believe that the rest of the decade will still be characterized by slow growth.

PERFORMANCE IN MAJOR SECTORS

Turning specifically to agriculture, farm output rose by about 6½ percent in 1983, largely as a result of the rebound from 1982's poor showing. Nevertheless, the value of agricultural output in 1983 was only 5 percent greater than the previous record achieved in 1978, and we expect no growth in agricultural output in 1984. The USDA estimates that grain production in 1984 will only be about 170 million tons, 25 million tons below its estimate for 1983. As a result, the U.S.S.R. will probably import at least 45 to 50 million tons of grain during the 1984-85 marketing year, of which as much as 20 million tons will come from the United States.

Industrial performance was mixed. The increase of 3.4 percent in industrial production in 1983 was the highest since 1977, but still far below the 6-percent growth registered in the early 1970's. Growth at about the same pace seems likely this year.

The most significant improvement has been in sectors producing industrial materials. These industries faltered in the last half of the 1970's and early 1980's, but recovered partly in 1983 and 1984, for reasons that I will detail in a moment.

Unlike industrial materials, growth in the fuel industry as a whole continued to fall. The combined output of fuels in terms of value added to GNP grew by only about 1 percent in 1983-84, compared with 2 percent during 1979-82. Oil production may decline for the first time since World War II. Through October of this year, oil output was running about 100,000 barrels per day below last year's pace. Coal production also continues to fall slowly. A partial offset to the coal and oil pictures, as it has been in recent years, is the robust growth in gas output, which should grow about 10 percent this year. The electric power sector also has enjoyed a resurgence.

Meanwhile, planners must be distressed by the failure of the civilian machinery sector, the key element supporting investment, to rebound along with the rest of the economy.

In contrast to the mixed showing in industry, the one area of major improvement has been the foreign trade sector. The Soviet hard currency position has improved steadily since 1981-82 and by mid-1984 was quite solid.

REASONS FOR IMPROVED PERFORMANCE

Why has measured economic growth outside of agriculture apparently turned up in the 1983–84 period after several years of poor performance? The answer is crucial for our future assessments of the Soviet economy. If the better performance resulted from temporary influences, we don't have to alter our basic judgment that economic growth of around 1½ to 2½ percent a year is likely throughout the remainder of the decade. If the improvement resulted on the other hand from fundamental changes, then our estimate of future growth needs upward revision.

In our view, the modest improvements we have seen over the last 2 years do not reflect success in dealing with fundamental problems such as slow labor growth, rising resource costs, and basic shortcomings in the system of organization and management. First and most obvious, improved weather in 1983 and 1984 aided the economy. A series of bad winters in the late 1970's and early 1980's led to excessive demands for electric power and disrupted transportation. Plants were idle waiting for raw materials to be produced and transported to them, and this, in turn, adversely affected other sectors.

In contrast, the better weather in 1983–84 eased the strains on the economy. Agricultural production surged in 1983. Transportation benefited from fewer weather-related interruptions, the demand for fuel eased and allowed electric power generation to expand and support the recovery. Just as the negative effects and bottlenecks had spread throughout the economy during the poor years, so breaking them produced the opposite effect, allowing production to run more smoothly and downtime to be reduced. The discipline and anticorruption campaign initiated under Andropov, which was most recently reaffirmed by Chernenko last Thursday, has compelled greater efforts from both labor and management. Spot checks of enterprises for unauthorized leave and other disciplinary methods have paid off in an increase in the average number of hours actually worked per person.

Management changes have also been a significant factor in the turnaround. In rail transportation, a sector which seems to have suffered from especially lax leadership during the Brezhnev era, the new minister of railroads not only tightened discipline, but also instituted several new programs such as requiring enterprises to repair damaged freight cars. Finally, a tougher line with those involved in bringing new plant capacity on line seems to have yielded dividends. Commissionings of new plant capacity in 1982 and 1983 increased by a hefty 5 percent each year, up sharply from the late 1970's. Industries producing industrial materials received some of the new capacity, helping to ease bottlenecks in the industries relying on them.

The faster growth in new plant capacity was, in turn, helped greatly by a leadership decision to push investment markedly above plan levels. We estimate that new fixed investment in the first half of the 1980's will rise by roughly 20 percent compared with 1976–80, almost double the planned growth of 10.4 percent.

The savings from the slowdown in military procurement growth that I discussed last year probably were crucial to this decision, be-

cause machinery production and weapons production compete for many of the same raw materials and industrial capacity. I should note, however, that increased investment, especially in machinery production, will pay dividends in terms of long-range military programs and procurements.

One way to look at the recovery is that it has not been primarily the result of faster growth in the labor supply or industrial plant and equipment, but rather a reflection of improvements in the apparent productivity with which available labor and other resources were used. Overall productivity in industry, for example, increased in 1983–84 after several years of steady decline. Much of this stabilization is an echo of the factors I've already cited. The breaking of bottlenecks and improved supply of raw materials helped productivity by permitting greater utilization of available capital stock and labor force in industry. Similarly, the regime's crackdown on poor worker discipline seems to have generated higher labor productivity by reducing the time spent off the job.

ECONOMIC OUTLOOK

Turning to the future, can the Soviet economy's better showing be sustained in the years ahead? On balance, we think the GNP growth in the next year or two probably will remain the 2- to 3-percent range. This estimate reflects primarily a judgment that industry and other key sectors outside of agriculture will continue their improved growth performance of the last 2 years, and an assumption that agriculture will recover modestly. Because year-to-year movements in GNP depend heavily on agricultural output, growth could be outside this range on either the higher or the lower end if the weather is unusually good or bad next year or in 1986.

Even when looking out only a year or two, a number of uncertainties cloud the picture. Whether the labor discipline campaign has run its course is a major question mark, although Chernenko apparently so far has been able to sustain momentum created by Andropov. Continued progress in eliminating bottlenecks and raising utilization rates will also be necessary but won't be easy. The railroads, for instance, continue to operate at near capacity, and serious transport snarls could resurface at any time.

The stronger showing of much of the economy in 1983 and 1984, even if it continues another year or two, would not, in our view, foreshadow a significantly higher rate of growth over the longer term than we have indicated in our past testimony.

All things considered, we believe Soviet economic growth will average only about 1½ to 2½ percent per year in the second half of the 1980's. We believe that the special factors that helped in 1983 and 1984, like improved weather and the discipline campaign, will be difficult to depend upon or sustain in the future. Moreover, the gains from partial relief of some bottlenecks in areas like transportation and industrial materials will have to be expanded.

Meanwhile, the more fundamental factors that have constrained growth since the late 1970's continue to intensify. Additions to the working age population will be lower in the next several years than at any time since the early 1960's. Growth of the Soviet stock

of plant and equipment is expected, at best, to hold steady at recent levels, despite some improvement in investment growth.

Meanwhile, the costs of industrial and agricultural materials are likely to continue to rise. Even though the Soviet Union is endowed with enormous raw material reserves, the cost of exploiting them has risen sharply as the more readily available sources are depleted. According to Soviet officials, for example, the investment for drilling needed just to maintain oil production at its current rate during the next 5-year plan will be at least double the investment expected under the current plan.

Economic growth will at the same time be held back by the U.S.S.R.'s highly centralized system of planning and management. Indeed, the greatest potential for economic gain over the longer term continues to lie in economic reform. Nothing in Chernenko's background or past pronouncements, however, indicates an inclination toward bold systemic change. After almost a year in office, the General Secretary has largely carried over the very limited programs of the previous administration.

The inflexible Soviet system continues to contribute to the U.S.S.R.'s technological backwardness. The gap between the U.S.S.R. and Western countries continues to grow in technologies not directly confined to weapon systems. The Soviets have been particularly unsuccessful in stimulating advance in the technologies that underlie the resurgence of western productivity growth—microelectronics, computers, robotics, and advanced materials. They concentrate on copying Western developments, and only a massive program for acquiring Western technology has prevented them from falling even further behind. I would note that just recently in a Soviet physics journal several leading Soviet scientists advised the Academy of Sciences that the U.S.S.R. is lagging "well behind the West" in this area.

The most important of the reform programs carried over from the Andropov regime is the so-called "economic experiment" introduced in January 1984 on a limited basis. The experiment gives enterprise managers more latitude to spur productivity by using investment and wage funds. Soviet planning officials have characterized the experiment as a proving ground for measures to be introduced later throughout the economy as a whole. They already have expressed satisfaction with its preliminary results. Our assessment is that the experiment is too limited to have much potential for improving industrial performance. The limited success cited so far is probably more the result of the priority given to the needs of the participating enterprises than to the new operating procedures themselves.

RESOURCE ALLOCATION

Despite some gains over the last 2 years, the competition for resources remains tight. The last two leadership changes created some opportunities to adjust policies, but trends in investment, consumption and defense can change only slowly.

New fixed capital investment is taking a slowly rising share of the national product. This suggests it has received a somewhat higher priority recently. Investment increased at an average

annual rate of more than 4 percent during 1981-83, and the 1984 economic plan calls for a similar increase. The decision to undertake more investment in plant suggested that Soviet leaders decided they could not wait for the productivity gains on which the 1981 to 1985 plant relied. With respect to consumption, General Secretary Chernenko, like Andropov before him, has shown concern for the welfare of the Soviet consumer through the investment and foreign trade policies he has supported. To shore up the availability of quality foods, Moscow has continued to import large quantities of agricultural products. About one-third of Moscow's total hard currency outlays were spent in 1983 on agricultural imports.

The Soviets also have stepped up construction of new housing, with the increase in 1983 representing the largest in more than 20 years. Still, consumption levels in the U.S.S.R. have risen only slowly in the 1980's. Per capita consumption, for instance, dropped in 1982, and increased by only 1.5 percent in 1983. Our preliminary estimate is that consumption gains in 1984 will be greater than in 1983, in part because of a substantial rise in meat production.

Turning to defense, as I discussed last year, the U.S.S.R. has experienced slower growth in defense spending. From 1976 to 1982, outlays on military programs increased on the average by about 2 percent a year. This rate was about half that of the previous decade. Growth slowed in most categories of defense spending, but the main source of the reduction in growth was a leveling off of military procurement.

It is important to note, however, that the level of Soviet procurement spending remained throughout well above present U.S. spending levels. Soviet expenditures remain high enough to permit the defense establishment to continue to modernize its forces and enhance substantially its military capabilities. For example, even though procurement expenditures were roughly flat for several years after the mid-1970's, Soviet military units received more than 1,100 ICBM's; 700 SLBM's; 300 bombers; 5,000 combat and interceptor aircraft, including MIG 23's and 27's; 15,500 new tanks, including the T-72 and T-64 tanks; substantial numbers of major surface combatants, nuclear-powered ballistic missile submarines, and attack submarines.

When speaking last year about the slowdown in Soviet procurement growth after 1976, I offered several explanations, including policy decisions, technical difficulties, manufacturing constraints, and industrial bottlenecks. Despite much effort since then, we are still not able to establish a clear picture of events during this period.

We do know, however, the procurement slowdown lasted at least 7 years—from 1976 through 1982. This plateau has arguably lasted too long to be the result, exclusively, of bottlenecks and technological problems. We believe that had this been the case, we would have seen signs that the leadership was committing the additional resources needed to resolve the economic difficulties constraining military procurement. The absence of such signs points to a leadership decision either to hold procurement growth down or not to commit the additional resources needed to resolve economic difficulties constraining them. Certainly, judgments about both the state of the Soviet economy and the military balance with the

United States during that period would have been factored into these decisions.

Even if the leadership put a temporary, though high cap on military procurement, unanticipated factors clearly complicated the picture. For example, modern Soviet weapons embody ever higher levels of technology. The Soviets could be experiencing some difficulty in developing and manufacturing new weapons. We also know that the shortages of key materials and transportation problems that affected much of Soviet industry, especially since the mid-1970's, also spilled over into the defense sector. Despite the traditional priority accorded to defense, it become more difficult to isolate defense totally from these economic disruptions.

What about defense spending in 1983? [Security deletion.] While we have at best only very preliminary estimates for 1983, they do suggest some growth in procurement last year. [Security deletion.] This upturn in procurement could be a harbinger of the return to faster procurement growth. I want to say, however, that our estimates for 1983 are tentative for two reasons. First, for some very expensive systems [security deletion] we must allocate the final production costs over several years, based on estimated completion dates. If our estimate of total costs or the completion date is inaccurate, we will have to revise the estimated costs for such systems that have been allocated to 1983.

Second, for some other new systems, we have to estimate production rates based on our projections of Soviet deployment objectives. If the system is deployed in smaller numbers than anticipated, our current estimates of procurement costs for such systems in 1983 would have to be revised downward. We have repeatedly had to make such revisions in recent years. These revisions have reduced or eliminated apparent spending upturns.

As always, statements by Soviet leaders leave much room for diverse interpretation on the spending issue. In a speech to the Politburo last week, Chernenko indicated that the 1985 annual plan would allow for a strengthening of the country's defense capability. We don't know whether this indicates an intention to resume or sustain procurement growth. Such rhetoric is not unusual for a Soviet leader. Moreover, as I've already mentioned, the Soviet Union has been able to strengthen its defense capability by a significant amount, even with the slower spending trends of recent years, and they certainly could continue on that same course.

With the economy and defense spending both growing more slowly since the mid-1970's, the share of GNP allocated to defense has remained at 13 to 14 percent, in our view, or considerably higher than the comparable 7-percent figure for the United States. This measure of burden, however, does not capture the full impact of defense on the Soviet economy. Some key industries must devote especially large shares of their output merely to support defense programs. For example, more than 25 percent of all machinery production is allocated to military procurement, even though procurement is no more than 7 percent of GNP.

In the process, resources are denied to the civilian sector that otherwise could be used to promote economic growth through investment or to bolster consumer morale by improving the standard of living. The military has priority access to the highest quality

raw materials, to transportation and the distribution of raw materials, to the best industrial workers, to the national pool of research and development talent, and to the best and most advanced machinery.

Additionally, there are other areas of Soviet expenditure—subsidized weapons sales, support for surrogates such as Vietnam and Cuba, dual-use production facilities, and others—that constitute part of the national security burden not accounted for in our statistical calculations.

Obviously, however, the improvements in industry that I discussed earlier provide the regime with somewhat more leeway to commit more resources to defense without reducing allocations to consumption and investment. Nonetheless, we continue to believe that Moscow's room for maneuvering in choosing among military and civilian claims on resources will be severely limited, given the prospects for slow economic growth.

OUTLOOK

The Soviets have released little information about their plans and policies after 1985, but we do know that the Soviet leaders have already adopted two very expensive programs for the 1986-90 5-year plan—the food program and a long-term energy program. The investment cost of the food program could run as high as 265 billion rubles, suggesting that agriculture's priority will not be downgraded. Indeed, at a recent special Party Plenum devoted to agriculture, Chernenko announced ambitious output and investment goals for land reclamation, calling success of the food program critical to the leadership's effort to raise consumer welfare and productivity.

Investment in energy is also likely to be an enormous drain. At a minimum, we expect the investment in the energy complex to total 170 billion rubles, an increase of 28 percent over the planned investment in 1981-85.

Although the Soviets have announced no official target for total investment during the 12th 5-year plan, there are indications that investment may continue to increase at the current rate of growth—about 4 percent a year. Anything less, assuming they go ahead with the food and energy programs, would put a severe crimp in the amount of investment resources available for other essential areas, such as machine building.

Overall, in our judgment, the leadership will probably attempt a precariously balanced policy of at least some growth in living standards, slowly increasing allocations to new plant and equipment, and some growth in resources committed to defense. This is, in fact, our judgment of the content of Chernenko's speech last week.

Certainly, the pressure to step up defense procurement must be strong, but a decision to increase the rate of growth of defense spending has to be a tough one. Our analysis indicates, for instance, that even at current rates of growth of investment and defense spending, per capita consumption would only grow by 1 to 1½ percent a year through 1990. Obviously, any shift toward de-

fense would endanger even these modest improvements in the consumer's situation.

THE ECONOMY AND FOREIGN POLICY

Continued economic growth in the 1½ to 2 percent range is unlikely, on its own, to force major changes in Soviet foreign policy. We do not see economic problems at home, for example, motivating the leadership to undertake high risk adventures abroad that are designed to distract an unhappy public or produce economically beneficial geostrategic breakthroughs. The slowdown in economic growth will have its most serious external impact in Eastern Europe, which currently receives most Soviet economic and military aid. Further reductions in the deliveries of some fuels and raw materials from the U.S.S.R. are likely and could cause new political and economic strains to develop in Eastern Europe.

The economic slowdown will also affect Soviet policy toward the Third World. In general, Moscow is likely to become more parsimonious, except where political and military strategic factors outweigh economic considerations, as in Cuba and Vietnam.

With respect to U.S.-U.S.S.R. relations, though we don't believe that Moscow can rely on increased imports as a general solution to the resource pressures in the economy, the Soviets will have a continuing incentive to obtain U.S. grain and state-of-the-art technology in such key areas as energy and agricultural technology. Moscow will find the United States attractive as a source of grain because of its unique year-round capacity to deliver large volumes of grain quickly. Large-scale U.S. assistance also would be helpful to Moscow in maintaining oil output and developing arctic offshore resources. Meanwhile, Soviet decisions on arms control are likely to continue to be driven primarily by calculations of political-strategic advantage and the dynamism of weapons technology.

In sum, the picture of the Soviet economy that I have described today is clearly a mixed one. We have seen modest improvements in industrial performance since 1982, but the last few months may signal the end of this recovery. GNP growth is down somewhat in 1984, after a significant improvement last year, but much of this decline can be attributed to problems with agriculture.

The defense procurement plateau I identified last year continued through 1982, but preliminary figures suggest an upturn last year. This could be a reflection of a Soviet decision to commit some of the recent growth dividend to defense. However, we clearly need a year or so of additional data to firmly establish the existence of a new trend.

Turning now to China.

Senator PROXMIRE. Before you turn to China, I'd like to ask you some questions on the Soviet Union. Then we'll go on to China.

DEFENSE BURDEN AND PROCUREMENT

Before I get into the questions I've prepared, I notice in your presentation this morning you have the statement:

> Important to note, however, that the level of Soviet procurement spending remained throughout well above present U.S. spending levels.

Then you say:

With the economy and defense spending both growing more slowly since the mid-1970's, the share of GNP allocated to defense has remained at 13 to 14 percent or considerably higher than the comparable 7 percent figure for the United State.

Now I notice in the CIA's comparison of Soviet-United States gross national products, you have the gross national product in 1983 at 55 percent of the U.S. GNP. That would suggest that the defense spending is about almost exactly the same in the United States and the Soviet Union. In other words, say, take 13½ percent as their growth, as their burden, and 7 percent for us. It's just about equivalent as far as defense spending is concerned. Now procurement is just one part of defense spending, but it seems to me, in view of our substantial increase in procurement in the last 3 or 4 years, that it would be unlikely that they would be spending a great deal more, that Soviet procurement would remain throughout well above present U.S. spending levels.

Mr. GATES. Let me make one general comment and then ask Mr. Licari to pursue this.

The statement refers to a several-year period. The level of Soviet procurement spending remained throughout well above present U.S. spending levels. We are talking here, essentially, of a cumulative figure for 1976 to the present rather than just single year figures. We're talking about the cumulative advantage that the Soviets have had in spending during that period.

Let me ask Mr. Licari to pursue that.

Mr. LICARI. I think the best way, Senator, to answer the question is to go directly to the issue of comparing defense spending. I think, in a sense, trying to reach it from relative burden and relative GNP levels rounds out the differences. We do have, obviously, direct estimates of defense spending.

Senator PROXMIRE. They're a little fogged up by the fact that you no longer have dollars to rubles; right?

Mr. LICARI. We still do the calculations.

Senator PROXMIRE. But you don't make them available.

Mr. LICARI. They have not been published in a research paper since about a year ago, but certainly, the calculations are done. The analysis is done, and continues to show spending gaps, whether it is in dollars or in rubles. Those yearly differences, as you're implying, tended to come down over time, because of the faster rise in U.S. defense spending than Soviet, but over a 10-year period, which is a better measure, I think, of a commitment to defense activities, there is a substantial difference between the Soviets and the United States in the commitment of resources to defense activities. That long-term difference remains through 1982.

Senator PROXMIRE. It would be most helpful to me, if you could give me some notion, other than a generalized statement, that the level of Soviet procurement spending remains above U.S. spending levels.

Roughly, how much higher is the Soviet Union defense procurement spending today than the United States spending, in your calculations?

Mr. GATES. We are least comfortable and least confident using single-year comparisons.

[Security deletion.]

MILITARY TECHNOLOGY

Senator PROXMIRE. Now you warned us, there's a great difference in the technological capability of the United States and the Soviet Union. In other words, our weapons may be more accurate, they may be less vulnerable, they may have other qualities that provide some advantage. So that the fact that they are spending [security deletion] more for procurement and [security deletion] more overall, including personnel, would not necessarily tell us that they have a stronger military force.

I'm not asking you whether anybody can tell us that, of course. That's a matter of all kinds of value judgments, but I take it that in view of our technological advantage, I would assume that that might diminish whatever advantage they have, or maybe even completely eradicate any advantage the Soviet Union has.

Mr. GATES. That would not be our view, Senator. My statement was that the gap between the U.S.S.R. and developed Western countries continues to grow in technologies not directly confined to weapons systems. I think our view would be that in a variety of weapons systems, Soviet technology is equal to or even surpasses that of the United States. The accuracy of their best missiles, the quality of their best tanks, the quality of some of their air defense equipment and a variety of other equipment that the Soviets have is at least as good as our equipment.

MISSIONS

Senator PROXMIRE. In view of that statement, let me ask you if, for the first time, I can find a witness from any administration, and it's been a long time, as you point out, 11 years—I have yet to find anyone who would say that they would trade our position for the Soviet position, in the sense that we would gain an advantage in doing so. In other words, when I ask overall, whether it's a defense secretary, or whether it's the head of the Joint Chiefs of Staff, whether they would trade our position for theirs, they'd say no.

Mr. GATES. I certainly would not want to put myself in the position of commenting on U.S. forces, but I would just point out that one factor involved in that may be the very different missions of the two forces, in that our forces are designed to meet our needs and the Soviet forces are designed to meet their mission needs. We certainly don't have a Chinese border on which we have to keep 45 to 50 divisions.

DEFENSE SPENDING TRENDS

Senator PROXMIRE. Let me ask you some other questions.

As I understand your statement, there is evidence of some acceleration in the rate of increase in defense spending for 1983. The trend toward slower growth of about 2 percent yearly has now extended from the beginning of 1977 through 1983 and throughout this period, with the possible exception of 1983, there has been approximately zero growth in procurement; is that correct?

Mr. GATES. Yes, sir.
Mr. LICARI. Yes, sir.

UNCERTAINTIES IN ESTIMATES

Senator PROXMIRE. Is it true that the most recent year in your annual estimate of Soviet defense spending is the most tentative, because of uncertainties about the lack of uncompleted production? I should say the level of uncompleted production, or are there other reasons for the lack of confidence in the current estimate of last year's spending?

Mr. GATES. One of the problems with these estimates of Soviet defense expenditures, historically, has been that the data are least satisfactory for the most current year. It is the analytical and methdological problems that grow out of the fragmentary nature, the less than complete nature of the information for the most recent year, that makes us most tentative about this. We have always believed, and frankly, one of the caveats we have always attached to these estimates is that they are much better indicators of broad trends over time than precise measures of year-to-year movements. The best use is in terms of trends and overall spending comparisons among different elements of the Soviet military.

What we are trying to flag with our 1983 estimate is a possible reflection of a combination of industrial recovery, new systems that we think they are preparing to move into the field and continuing expansion of production facilities. We think we may see the first signs of a change in the trend that we were talking about for the late 1970's and early 1980's.

What we are trying to do for the Government at this point is register these early indications of a change in that trend. Beyond that, I wouldn't frankly want to get very specific.

Mr. LICARI. Excuse me, Senator. I might add one point on the problems with the methodology, since you did mention that. You were asking if the issue of uncompleted construction was a primary reason behind the uncertainty in estimates for the most recent year, 1983. That certainly is a big factor in the area of ships and boats, of course, where construction costs have to be phased over a number of years.

There is another element which is also a factor, and that is that production rates for some new systems for the first year or two are inferred from judgments about the ultimate deployment objectives—this holds for missile systems, aircraft systems, and so forth. Those ultimate deployment objectives have to be worked back into estimated production for the first year or so.

There are these two factors, I would say that are problems with the methodology.

RECENT REVISIONS

Senator PROXMIRE. You mentioned that the current estimate for spending in the past year has been revised downward recently. Does that mean that in each of the past 5 years or so, you overestimated growth in procurement spending and later determined that there was no growth, and can you provide us with the correspond-

ing figures, and can you also explain why the initial estimates tended to be on the high side?

Mr. LICARI. I'd say, in general, the initial estimates were higher than the final. In several years, final growth may have been at 1 percent or so, but in general, for the last 2 or 3 years, we have seen the initial estimates for a year come down a bit with additional information. Primarily, this reflects the cost phasing issue and the projected deployment aspect of the methodology.

Senator PROXMIRE. Mr. Kaufman will follow up on that.

Mr. KAUFMAN. Earlier, Mr. Licari, the statement was made by Mr. Gates that the apparent increase in spending for 1983 suggests that for the first time, there may be evidence of a change in the trend of spending. But you just said that in the past several years, you initially identified increases, apparent increases in defense spending, which later had to be revised downward.

Isn't it possible that this same phenomenon will occur again, and that what is being identified now, as far as 1983 spending is concerned, will next year be viewed as not a change in the trend?

Mr. LICARI. There are two things I'd mention on that. One thing, certainly, is the economic recovery that we seem to be talking about lasting the last couple of years. It provides the industrial basis for improved growth in procurement, if that was, indeed, a decision. So there is a new factor underway here, that wasn't, I'd say, part of the story a year or 1½ year ago. So it may be that we now see the industrial component of an upturn in procurement growth that wasn't there a couple years ago.

I think there's also an element of our estimation process that we've been working on the last couple of years that tends to reduce some of this uncertainty in talking about a recent year like 1983. One of the problems in talking about the most recent year is that, in a sense, it's affected greatly by projections. As I mentioned, this is especially true for projections of large naval systems, and also projections of deployment rates for new missile and aircraft programs. We've tried to improve that projection process by bringing together analysts who are not only experts on the military issues regarding future deployments, but also analysts who are tracking the Soviet economy and industrial capacities.

Senator PROXMIRE. Isn't there another element that I think is perhaps the most dynamic of all, as far as we're concerned? In the last few years, we've built up our military forces, and as a member of the Appropriations Committee, as well as the Joint Economic Committee and the Defense Appropriations Subcommittee, I find that whenever the argument is being made by any administration for buildup, they say, "Look at what the Soviet Union is doing? They're building up. We have to match them. We have to surpass them. We can't fall behind."

Isn't it very likely that they'll be saying exactly the same thing?

Here we have a situation, whereas we point out our procurement has increased over the last 3 or 4 years, it would be unusual if they were indifferent to that, and didn't react to it at all? It would seem to me that the natural reaction on their part would be to resume that buildup?

Mr. GATES. That certainly would be one of the factors behind what we describe, the strong pressures for an increase in procure-

ment, but I would point out that during the period when the United States was not growing, particularly in the 1970's, that that did not at all affect the Soviet rate of growth. In fact, the Soviet rate of growth in defense spending remained quite high, so that at a time when the U.S. rate of growth was declining or very small——

Senator PROXMIRE. I'm not saying it's the dominant force. I'm just saying that there are a whole series of forces here that could do it. One of them could be their reaction to what we're doing.

Mr. GATES. That certainly, I would think, would be one factor, but I would just like to add to what Mr. Licari has said in terms of these uncertainties and emphasize a couple of his points.

What we have behind our assessment of 1983, and which represents a potential change in the pattern we have been observing, is not only new rigor in our estimates that we think reduces the uncertainty somewhat, but also the industrial recovery that he talked about that is likely to yield a dividend, if you will, for military spending. But finally, unlike the last couple of years, we now have some very major systems, for example, in the strategic arena that are now ready for deployment and that almost certainly will drive the strategic forces spending up; by how much, it's hard to say. So there are a number of new systems moving into the field now and vigorous growth in some other systems that are likely to be driving some of these costs up.

PROCUREMENT PROJECTIONS

Senator PROXMIRE. Is it also true that you expected procurement spending to increase in the late 1970's and that you were wrong? Procurement for strategic systems?

Mr. LICARI. I'm not sure that it was for strategic systems. I did a retrospective myself yesterday looking at the development of this procurement analysis over the last couple years, and our paper published in 1980 did look for an upturn in procurement in the late 1970's and early 1980's, and the paper published a year later made a similar judgment.

So you're accurate, Senator, is saying that at one time, the analysis did look for an upturn in procurement in the late 1970's or early 1980's. In fact, that was why it was not until last year that we discussed a procurement plateau. It was not until last year that we had enough data to define a plateau, as opposed to a procurement cycle of a year or two or three.

AFGHANISTAN

Senator PROXMIRE. Of course, that plateau could have been affected, maybe not, but could have been affected by the drain of the Afghanistan invasion. That undoubtedly accounted for much of their activity, since they were so involved in that. Perhaps they had to slow down the procurement with that in mind.

That started, what, in 1978?

Mr. GATES. 1979. At the very end of 1979. My own view is that it probably would not have exercised much of an influence. We calculate that Afghanistan—correct me if I'm wrong—is costing them on the order of a little over $1 billion a year.

Mr. LICARI. That's for additional costs.

Mr. GATES. Beyond ordinary military expenses.

REASONS FOR SLOWDOWN

Senator PROXMIRE. I notice that you concluded that the procurement slowdown was in part due to a policy decision, at least to the extent that older generation weapons were not kept in production of new systems not produced at catchup rates. You go on to say that Soviet leaders in the mid-1970's may have viewed the external threat as manageable and a high level of procurement as enough.

Is it possible that with regard to strategic forces, they determined that they had obtained or would soon obtain parity with the United States, and that parity could be maintained without increasing the level of effort within this area?

Mr. GATES. My view is that by the end of the 1970's, the Soviets calculated particularly in the strategic arena that not only had they achieved parity, but in some respects had surpassed it and had, through a decade and a half of strategic developments, put themselves in what they regarded as a satisfactory position vis-a-vis the United States. It was a position that included advantages for them, in numbers of submarines, numbers of ICBM's, and in some other areas, as well.

I do not believe that the Soviets in the late 1970's looked around them and said, enough is enough. The large R&D programs and the expansion of their production capabilities which we've seen over the last several years that began well before an increase in U.S. defense spending, cannot support any conclusion, in my view, other than that the Soviets have very ambitious plans for continuing to modernize, improve, and expand their forces.

STRATEGIC MISSILES

Senator PROXMIRE. But they slowed down, in fact. Your figures show that while all military services share in the reduced spending growth, the strategic rocket forces took a disproportionate share of the slowdown with an absolute decline after 1977.

Does that lend support to the view that there was a decision to stretch out strategic missile production or to produce missiles at a somewhat slower rate?

Mr. GATES. My own view is, not necessarily, because the Soviets, by the mid to late 1970's, were completing the deployment of the gereration of ICBM's that we see in the field now, the SS-18's, SS-19's and the SS--17's.

Senator PROXMIRE. We're talking about the level of effort. They completed what they wanted, and they didn't push on.

Mr. GATES. That's exactly right. They deployed the most modern generation of weapons that they had, and at the same time had other ICBM's in development to replace those. I believe that would have happened, irrespective of what the United States did.

CONVENTIONAL FORCES

Senator PROXMIRE. In the period 1977 to 1983, did procurement spending for conventional forces grow? If so, at what rate?

Mr. GATES. We do not have that, Senator. We could provide it.

Senator PROXMIRE. You'll provide it for the record?

[The following information was subsequently supplied for the record:]

During the period 1977-83, Soviet spending on conventional forces—measured in 1970 rubles—grew an average at about one-and-a-half percent a year. This was less than half the rate of spending growth estimated for these forces during the previous 10 years. Despite the relatively slower growth rates in spending on conventional forces since 1976, the Soviets still procured sizable numbers of new, more capable conventional weapons. These include:

New models of self-propelled atillery, some nuclear capable, and about 15,500 new tanks, including the costly T-72 and improved T-64 models.

More than 30 major surface combatants and some 70 attack submarines.

About 5,000 fighter aircraft including the Mig-23/27 Flogger fighter.

DIA ESTIMATE FOR 1983

Senator PROXMIRE. In June of this year, the Defense Department announced a preliminary estimate of Soviet spending shows an increase of 5 to 10 percent in procurement for 1983 over 1982.

Have you discussed your findings with those announced by the Pentagon, which I assume were produced by the Defense Intelligence Agency, that is, they're now in agreement with your estimate?

Mr. LICARI. Senator, as you know, we certainly discuss regularly the work that we do on defense spending with the Defense Intelligence Agency. We have discussed in detail with them their estimate that was published in May or June of last year. We reviewed it carefully.

Senator PROXMIRE. May and June of this year, you mean?

Mr. LICARI. Yes, May and June of this year. Our own estimate for 1983 which we discussed today is so new that, while they're aware of it, we haven't discussed it in great detail with them.

One of the problems, of course, is making comparisons of DIA's work with our own. There are certain areas we can compare and certain areas we can't compare. We can compare order of battle and physical production data. It's often difficult to compare costing. The comparison exercises that we've gone through in the past suggest that our historical data bases give very similar cost trends.

Senator PROXMIRE. Well, both DIA and CIA make their estimates in dollar terms; right?

Mr. LICARI. No, that's not true.

Senator PROXMIRE. How about the June estimates?

Mr. LICARI. This is part of the comparison problem. DIA's estimate in June was in terms of dollars. We've been discussing ruble estimates most of this morning, because that's the basic way of looking at it from the Soviet perspective. We know historically, based on the work that we have done in both rubles and dollars, that a ruble estimate will grow somewhat faster than a dollar estimate, for a number of theoretical reasons.

We looked closely and compared our estimate with DIA's, in terms of physical production data. There are certain elements of their production data for 1983 that we would take issue with. Therefore, I'd say, on a production basis, we have some disagreements with DIA in terms of what they see for production in 1983.

Senator PROXMIRE. May I ask Mr. Kaufman to follow up on this?

CIA AND DIA ESTIMATES COMPARED

Mr. KAUFMAN. Mr. Licari, as I understand the estimates you're presenting today, although they are given in ruble terms, they're based on the same methodology that produced the dollar estimates in the past; isn't that correct?

Mr. LICARI. It's the same methodology that produced our dollar estimates, but it is not exactly the same methodology that DIA used in June. The DIA estimate in June of this year was based on costing approximately 150 Soviet systems, which account for approximately 50 percent of procurement in costing and dollar terms. The estimates we're discussing this morning reflect a complete fiscal estimate for procurement and other elements of defense activities for 1983 in ruble terms.

So the DIA estimate works off of partial production data in dollar terms, and they did not make the translation from dollars to rubles.

Mr. KAUFMAN. If you presented your estimates of the rate of growth for 1983 in dollar terms, would they be any different than what you gave us in ruble terms? In other words, in dollars, was there a 2 to 3 percent increase in procurement last year?

Mr. LICARI. Based on our historical experience in comparing dollar and ruble estimates, I would say a comparable dollar estimate would be no higher than 2 or 3 percent.

Mr. KAUFMAN. The point that Senator Proxmire was making is that the DIA, in June, was saying that their dollar estimates showed at least on a preliminary basis a 5 to 10 percent increase in procurement for 1983.

Your estimate shows, either in rubles or dollars, according to your statement, a 2 to 3 percent increase, and there is that disparity in the two assessments.

Mr. LICARI. That's correct.

Mr. GATES. If I may add, though, one of the things again that seems to me important in this is to go back to the statement that I made about identifying trends and the dangers of using these specific figures in any kind of absolute sense. Just as we and DIA identified what appeared to be a flattening of procurement, although we differed in some degree on that, we are both also calling attention to what we both see as indications of a departure from that pattern from 1977 to 1982, some upturn again in the level of procurement in Soviet military spending. And so it seems to me that it's that essential signal that the analysis that both agencies have undertaken and come up with, that is more important than what we and DIA, I think, would regard as our highly tentative specific figures for 1983.

DOLLAR COST ESTIMATES

Senator PROXMIRE. Why is there no presentation of the dollar cost estimates of Soviet defense? Is it correct that the ruble estimates you have given us are based on the dollar estimates?

Mr. GATES. Senator, when I took this position 3 years ago, I brought to it, based on a career of working on Soviet problems, some fundamental misgivings about some of the CIA's work on costing of the Soviet defense effort.

My misgivings concerned not the quality of the people involved, or the methodology, but more fundamentally, two things: First of all, the very different natures of the Soviet and American economies, and the way that we go about our business on military spending; second, what I regard as probably a lack of sufficient data to be able to make accurate comparisons. Because I am not an economist, I convened a panel of outside experts including some of the leading experts on Soviet economics in the United States.

I asked them to take a look at CIA's work, across the board, on this issue. I asked them to talk to all of the critics that they could reach, both those who think we estimate too high and those who think we estimate too low, and to give me their recommendations in terms of what ought to be done about our defense estimates, our estimates of Soviet defense spending.

They came back with a number of recommendations for improving the effort.

They fundamentally endorsed the effort. They thought a great deal more attention should be paid to the ruble estimate, and they also, I might add, recommended a significant addition in resources to work on this problem.

But perhaps their strongest recommendation concerned their view, after talking to a number of people in the Department of Defense and here in the Congress, about the misuse of CIA's estimates on Soviet defense spending, by the Department of Defense, by Members of the Congress, and so on.

They were concerned, and their strongest recommendation was, that CIA take a much more aggressive role in trying to prevent misinterpretation and misuse of those estimates.

Last year, we tried to do this with the dollar cost paper, by beginning it with something like six or seven pages of caveats warning people about the limitations on the value of those calculations, and about the dangers of reading too much into any specific figure, whether it's a single-year defense cost or a percentage figure or whatever, that the value of these estimates rests in their estimation of trends, signaling changes in trends, and levels of effort among different forces.

Those caveats did very little good. We still have the same problems that we have had in the past.

As a result, and given my substantive misgivings about the comparison of these two defense efforts—because it is so much a matter of mixing apples and oranges—I went to the Director, and it was at my initiative, and proposed to him that we not do the dollar costing paper, that we would continue to do the dollar costing work because it supported much of our work on ruble costing, but that the main effort that we should undertake should be to try and get a better picture of the burden on the Soviet Union, because our comparisons have become political figures.

When we began getting involved in comparing United States and Soviet defense spending, the figures themselves became political, and diverted attention from the longer range trends and problems that we were trying to point out in the Soviet system.

When I inquired of our people——

IMPORTANCE OF ESTIMATES

Senator PROXMIRE. Let me just interrupt to say, you know, I know you deplore that, and I appreciate your great concern for precision and exactitude, but that's what we have to do. That's why we want the figures. That's what we want to know about them.

We want to compare their effort with our effort, and that's the value of the figures. It's nice to just sit there and speculate about whether they're getting bigger, smaller, or whatever, but we're concerned with what we should do, as policymakers here. We have a responsibility, so that the President should decide how much we should spend on resources, military resources, whether we should go ahead with weapons systems, whether we should increase procurement or decrease procurement, or maintain the same level.

And of course, the relevance of this information is to that decision. We have to make some kind of judgment somewhere along the line about how they compare with us.

DEPARTMENT OF DEFENSE AGREES NOT TO USE DOLLAR COST ESTIMATES

Mr. GATES. Senator, I certainly don't disagree with that at all. My concern, though, is, as the person responsible for putting together some of these figures, that it seems to me—aware of the shortcomings of these statistical calculations, and the differences in the two systems—that those kinds of decisions are better made on the basis of what the two sides have, on the capabilities of their military forces—how many tanks do they have, how many ships do they have, how many missiles do they have, and what are the capabilities of those systems—rather than some analytical construct that has some significant shortcomings.

In any event, I made the recommendation to the Director that we approach the Department of Defense, ask them, or tell them, in effect, that we would not be doing the dollar-cost estimate, and asking them that they not use dollar-cost estimates in their various publications, such as the posture statements and so on.

The Secretary of Defense agreed to that. Our effort is, in fact, to try and get a better handle on the burden on the Soviet Union, and we at the same time will continue to provide all of the information that we can, all the information that we have, to the Congress in terms of Soviet military capabilities and the systems that they have.

ESTIMATES NECESSARY TO MAKE COMPARISON

Senator PROXMIRE. Isn't it correct that without dollar estimates it would not be possible to make direct comparisons of the United States and the Soviet military spending on an aggregated or disaggregated basis?

For example, if I wanted to know who is spending more for bombers or surface-to-air missiles, wouldn't I need to have dollar estimates?

Mr. GATES. If you want to address the question of spending, that is accurate. But again, it seems to me that the more accurate comparison would be between how many they are buying and how many we are buying, what the capabilities of those aircraft are,

what their production capabilities are, and what their deployment patterns are.

It's a far more realistic assessment, it seems to me, of the relative needs.

Senator PROXMIRE. The only way we can know the resources going into this, and compare them, is with dollars. Dollar to dollar.

Mr. GATES. I don't think that that's true, in the sense that we can give you a very good estimate of the production capabilities of the Soviet Union for a given bomber, how many they're building, how many they are deploying, what the capabilities are.

Senator PROXMIRE. But not the resources in dollar terms?

CHANGE IN TRENDS

Let me just proceed. A disturbing aspect of the decision to withhold the dollar estimates is that they are being withheld just at the time when they no longer seem to indicate the trends that favor the Soviet Union. In the past, much has been made of the fact that the dollar-cost trends showed an even greater disparity between Soviet and United States spending for overall defense in various categories of spending, such as tactical aircraft, defense and strategic weapons, and the like.

Won't the decision to withhold dollar costs be interpreted as a victory for the Pentagon to suppress information that does not support their request for a larger budget?

You can see why the Secretary of Defense would support that.

Mr. GATES. The Secretary of Defense may have supported it. Some of his subordinates who have used these figures did not, and are unhappy about the fact that they're not being provided, and are still trying to fight that battle, if you will.

It seems to me if we had wanted to do this, to try and help the Department of Defense, we'd have done it last year, not this year.

Last year was the first year that we pointed out the plateau in procurement. Last year was the year that we talked more concretely than ever before to this subcommittee and to the administration about leveling off rates of growth and procurement, and Soviet military spending, over a period and a time when the political atmosphere in this country, if you will, was even more highly charged than it was now.

In fact, we are here with evidence that suggests that that pattern may have begun turning around. This would not have been a negative year, necessarily, from the standpoint of the Department of Defense, for us to do this, precisely because of these tentative indications we have that the Soviet procurement may be growing again.

Senator PROXMIRE. Only 2 or 3 percent, compared to our much higher percentage increases.

Well, I hope you understand, Mr. Gates, that I am not criticizing you personally, or your Agency's cooperation with the subcommittee.

As you say, this is the 11th year. You have been very forthcoming for a long time, and we greatly appreciate it. These have been most helpful hearings, as this one this morning is.

Would you be willing to make the dollar-cost estimates available to the subcommittee so the staff may examine them and report back to us?

Mr. GATES. Yes, sir. We will provide the subcommittee dollar-cost figures that we have.

Senator PROXMIRE. Thank you, sir.

[The information to be supplied for the record was a security deletion.]

IMPROVED ECONOMIC PERFORMANCE

Senator PROXMIRE. Now, you have discussed the factors that contributed to Soviet economic growth in the past 2 years, including improved weather and the discipline campaign, relief from raw material shortages, more effective management, better worker morale. Can you apply weights to these factors?

What's the most important?

Mr. NOREN. Senator, let me attempt to answer that. I think perhaps the most important factor in the improved performance of industry is the achievement of greater balance in the economy. In the early years, 1979, 1980–1981, and 1982, Soviet industrial capacity was working considerably below capacity. Perhaps the rate in some instances was 80 percent, 85 percent.

Senator PROXMIRE. Could you explain what you mean by "better balance"?

Mr. NOREN. Better balance. Industry was working below capacity because it was not receiving its raw materials, as we tried to indicate in the prepared statement; it was not receiving raw materials on time, the transportation and electric power problems——

Senator PROXMIRE. So relief from the raw materials shortages through improved transportation and so forth?

Mr. NOREN. Now, the weather was an important part of that, but I think we also have to give credit to the planners for not only raising the rate of investment, but also reallocating some of the investment to some of the troubled sectors. As a result, there was some resurgence, as we said, in electric power. The transportation sector received some help.

As a result of all of these factors, there was more balance in the economy. Industry received its raw materials, and you had the industrial recovery in 1983, which is continuing in 1984.

Senator PROXMIRE. Thank you, sir.

WEATHER

In the past, some CIA analysts have concluded that the 1980's would be a poor weather decade. Does the Agency still believe this?

Mr. GATES. There is, of course, Senator, a school of thought in Russian affairs, or Soviet affairs, that would suggest that the Soviets are now going through their 67th consecutive drought, given their agricultural problems. Frankly, we believe that the Soviets have to consider that at a minimum, statistically, at least 1 year out of 3 is going to be a bad one for them in terms of weather. At some points, it's worse than that.

One of the more interesting discussions of the effect of weather on Soviet or on Russian and Soviet agricultural production, is the

chapter in a book by Richard Pipes, "Russia Under the Old Regime," which lays this out in more historical terms.

In terms of whether we thought that the 1980's would be a worse period than the late 1970's—Jim, can you address that?

Mr. NOREN. In a chapter in one of the Joint Economic Committee compendiums of a few years ago, you may recall that we estimated that the spurt in growth in agricultural production in the early 1970's was the result of more than usually favorable weather, and that that probably would not continue.

Indeed, it did not continue. In fact, during the entire period from 1977 through 1981 or 1982, the weather was not favorable to agriculture. There has been considerable debate about the conclusions of that JEC paper that would seem to indicate that the weather through the 1980's would continue to be less favorable than it was in 1965 to 1975.

As a matter of fact, we have some studies underway looking in great detail at the weather patterns during the past decade. We will reach a judgment on that, I assume, in another year or so.

BOTTLENECKS

Senator PROXMIRE. According to your statement, the Soviet Government began to focus on transportation and raw material bottlenecks early in the 1981-85 plan. Apparently, they were successful to some extent.

What specifically was done to alleviate the bottlenecks? What actions were effective?

Mr. GATES. Based on what I have read, one of the most significant steps they took was to fire the head of the railroads in the Soviet Union and replace him with someone better.

I mentioned also in the testimony that the enterprises were given responsibility for repairing railcars when they arrived at those enterprises in damaged condition. Those were a couple of things that helped.

Maybe Mr. Noren can add some others.

Mr. NOREN. The improved weather in 1982-83 certainly helped transportation, as Mr. Gates has mentioned. Not only was the Minister of Railroads removed, but a number of the chiefs of the main administrations were fired. There was some reallocation of investment in favor of the railroads, and all these things put together permitted the railroads to recover somewhat.

ENERGY

Senator PROXMIRE. The Soviets have made progress in a number of oil and gas pipeline construction projects and the unified electric power grid system. You talk about a big improvement in gross national product because of their improved energy situation.

Is it possible that a critical mass has been achieved in improving the energy infrastructure and that they are now better able to manage their energy resources?

Mr. NOREN. They have made considerable progress in unifying the electrical grid system, and that enables them to save some investment. We also indicate in the testimony that we do not think that the energy outlook is all that favorable. We point out that the

rate of growth of energy production is now down to about 1 percent per year compared to 2 to 3 percent or even more in the 1970's. So we think they are managing their energy situation, but there is very little slack.

Senator PROXMIRE. Will energy be a constraint or will it not be a constraint in economic growth for the rest of the decade?

Mr. NOREN. Last year we pointed out that we had changed our view about energy being a constraint in the sense of limiting production. Since then, I think the outlook for oil production is perhaps a little less favorable than we thought then. On the other hand, they have made some progress in energy conservation. We think that the primary effect of the U.S.S.R's domestic energy position will be on foreign trade. We think that they will have less oil to sell abroad, forcing them, if they want to sustain some growth in the hard currency position, forcing them to market gas for hard currency.

Senator PROXMIRE. Thank you, Mr. Noren.

TECHNOLOGY GAP

You conclude, Mr. Gates, that the gap between the Soviet Union and the developed West continues to grow in technologies not directly confined to weapons systems.

Is there any way to measure quantitatively this gap or conclusions about it based on impressions and anecdotal evidence?

Mr. GATES. It really is a combination of both. We have some capability to estimate Soviet production of things like robots, industrial robots, the capability to produce computers, particularly smaller computers, more sophisticated computers, microelectronics, and so on. So we have a pretty good fix on it, and I might add, that as we improve our own capabilities in this area and resources are dedicated to this, we'll probably have a better picture of their production in these areas.

In addition to that, we have a notion of first of all, the size of the imports in these areas, the purchases that they're making of robots from Japan, and so on. We also have a good deal of anecdotal information about their own perceptions of their backwardness in these areas. And the point, really, is less to highlight the problems of the Soviet economy, than it is to illustrate that as a developed country, the Soviet Union is probably losing ground, as countries like the United States and Japan, France and others, move ahead into a world of industrial robotics, microelectronics, personal computers, and so on, that are just totally foreign in the Soviet system at this time. And in an information-based society, their capability or their recognition of this problem and ability to do anything about very much at this point seems very limited.

So their prospects, in terms—as a competitor, particularly economic competitor, seem fairly grim, in my view.

Senator PROXMIRE. It just seems to me, if they're having such difficulties with robotics, microelectronics, and computers, that that's bound to have an adverse effect on their military capability.

Mr. GATES. What we're really talking about, particularly when compared to the West and Japan, is the diffusion of these things throughout the society. We don't have any indication that they are

having problems acquiring adequate numbers of most of these kinds of things to meet their basic needs.

Senator PROXMIRE. Nevertheless, it would seem that in the long run, computers and robotics, particularly, are so essential in maybe 10 or 15 years from now, in improving productivity throughout the machinery section of the economy, that it will have some effect on their defense capability.

Mr. GATES. That certainly is true, and I think that's one reason why we see them turning to such substantial imports of these items. It's interesting, the limitations they seem to recognize in their ability to produce these things indigenuously, so what they can buy, they're buying. And in some of these areas, what they can't buy, they're stealing.

SOVIET TRADE WITH EASTERN EUROPE, CUBA, AND VIETNAM

Senator PROXMIRE. In your statement, you say you don't believe the Kremlin will have much success in reducing net exports to Eastern Europe.

Does that mean implicit subsidies to Eastern Europe and also to Cuba and Vietnam will not be substantially reduced, and their efforts to force these countries to pay their debts to the Soviet Union and reduce their trade deficits and accept world market prices will not be successful?

Mr. NOREN. During the past 4 years they have reduced deliveries of oil to some of the East European countries. As a result of the working of the price formula that governs prices charged, Eastern Europe has also been paying more for the Soviet raw materials. In other words, the terms of trade have been turning against Eastern Europe.

What we're saying is that we don't think that the Soviet Union can afford to cut back across the board on its exports of raw materials to Eastern Europe, and in some cases, it probably has already agreed to allow some increase. We think, however, that the trade deficits that have been a common occurrence in the past will, for the most part, be eliminated. We don't believe, on the other hand, however, that the Soviet Union will want to—well, it may want to, but will be unable to obtain repayment of East European debt to the U.S.S.R.

Senator PROXMIRE. How about their subsidies and their military assistance to Cuba? Are they likely to continue that, do you feel? Or is it possible that they'll reduce them?

Mr. NOREN. Well, military assistance, I believe—is an area that I'm not that familiar with. I believe that that will not be affected. There are some signs, in terms of the subsidies, economic assistance to Cuba, that the Soviets are, in fact, being a little harder.

Mr. GATES. If I may add, the evidence that we have suggests no decline in the amount of economic or military assistance to countries such as Vietnam and Cuba. What we see is some evidence of Castro, for example, seeking considerably more aid and the Soviets being very tough in terms of significant additions to the levels of aid they're already providing.

Senator PROXMIRE. How can they reduce their trade deficits, if they don't have much success in reducing net exports to Eastern Europe?

Mr. NOREN. If I said that, I misspoke. I said that the terms of trade had moved against Eastern Europe, which meant that the exports by the Soviet Union to Eastern Europe had leveled off. In turn, the East Europeans were being forced, because of the increases in prices, to deliver more goods to the Soviet Union, and, in fact, in the latest CEMA summit, the plans for the next 5 years seems to be for the Soviet Union to demand more in the way of advanced machinery, including some of the robotics and advanced technology that we're talking about earlier, but also, consumer goods.

SOVIET TRADE WITH THE WEST

Senator PROXMIRE. I understand the Soviets have not indicated which way they will go with respect to trade with the United States, other than with grain.

Can you explain this present Soviet policy and the prospects for trade with the West and the United States. Also, will you discuss, whether, in your view, progress in arms talks would influence Soviet policies toward trade with the United States.

Mr. GATES. Let me address generally, then see if Mr. Noren would like to add anything.

I think, in general terms, the Soviets are trying to encourage expanded trade with the West. They would like to sell more gas to the Europeans. They would like to buy more advanced machinery and technology from the West, or if they can't buy it, obtain it in other ways, as I mentioned.

Overall, trade with the West and with Japan, although occasionally costly to the Soviet Union, certainly serves their economic needs. In fact, some of the improvements in 1983 and 1984, may be due to some of the imports in Western technology that they have obtained.

There are some areas, obviously, that involve particularly high technologies, where they are looking to the West, whether it's petroleum exploitation or some of these more advanced technologies that we were talking about earlier.

I think that overall Soviet policy is worked out in economically sensible terms. In other words, they do not want to get themselves into the same economic bind that Poland did by getting too much in debt to the West. At the same time, I think they would like to have as much trade as possible. They would like it to be trade on terms that does not require them to spend hard currency.

Senator PROXMIRE. Does that mean increased trade with the United States?

Mr. GATES. I think the Soviets would very much like to increase trade with the United States, in part, or primarily to obtain these technologies, and so on. But I think their experience over the last 10 years has led them to the conclusion that their longer range interests are probably better served by trade with Western Europe and Japan, in part, because the terms are often better. And also,

they find it is easier, often, to obtain technologically advanced items from these countries.

Senator PROXMIRE. That might have military applications?

Mr. GATES. Yes, sir.

Senator PROXMIRE. That's unfortunate. That's something we've been working on.

Mr. GATES. In terms of what impact arms control, or whatever, might have on trade, I think essentially that those two aspects of the relationship are very separate in the Soviet mind. Obviously, any improvement in relations, the Soviets would see as contributing to an atmosphere in which they might have greater access to those technologies, but I think, fundamentally, they see them as quite separate.

Jim, would you like to add anything?

Mr. NOREN. I don't think I could add a great deal to that. In the past 9 months to a year, the Soviets have certainly signaled that they're interested in increasing trade with the United States, but in these indications, they refer to the better terms that they could get from Western Europe and Japan. They refer to their desire to receive most-favored-nation treatment from the United States. Most of all, they talk about arriving at some sort of arrangement whereby the deliveries of the products they buy can be guaranteed.

INFLUENCE OF THE MILITARY IN THE SOVIET GOVERNMENT

Senator PROXMIRE. Mr. Gates, how do you assess the influence of the military in the Soviet Government, whether it has increased or decreased in recent years, in light of the defense spending trends, the demotion of Marshal Ogarkov and other recent trends?

Mr. GATES. To be perfectly honest, we have some real uncertainties in this regard. One of those uncertainties, I must say, starts with whether or not Marshal Ogarkov has, in fact, been demoted, or has, in terms of the Peter Principle, executed a lateral arabesque to become commander of a major command in the West, because of some disagreements, perhaps, over strategy.

I think that the role of the military depends, in part, on your view of the Soviet Union. There is, too often, a tendency in the West to try to divide the Soviet leadership into hawks and doves or factions like that, one of which lines up with the military and one of which opposes them, and so on.

I think a more accurate analogy and it obviously has shortcomings, as all analogies do, is to suggest that the Soviet Union is much like Sparta. Virtually the entire economy and society is organized in a way in which the military and its needs receive first priority. That doesn't mean they have exclusive priority. It doesn't mean that there isn't competition for resources, but by and large, when hard choices come to be made, the military's interests will be protected, and I believe that that is the reflection of a consensus in the Politburo. Now obviously, having someone like Defense Minister Ustinov on the Politburo, given his 40-some years of experience at senior level in the Soviet Government, gives the Soviet defense establishment a very powerful voice.

It is our view that particularly since the death of Secretary Andropov both Ustinov and Gromyko have had much greater free-

dom of action in their own spheres of influence in foreign policy and in defense matters, that the other members have deferred to them, and the General Secretary has taken a less open or strong hand in the activities of their respective undertakings. That is not to say that Ustinov is purely and simply the tool of the uniformed military, although he certainly represents their interests well.

In terms of overall influence then, my own judgment is that the Soviet military has a very powerful voice at the center. It has the support of virtually all the members of the Politburo, and it is essentially fine tuning that finds the Soviet military competing for resources with some of the other elements of the economy.

Senator PROXMIRE. Now let's get into the Chinese, if you'd iike to present your presentation there.

Mr. GATES. All right, sir.

ASSESSMENT OF CHINESE ECONOMY

Much of what has happened economically in China over the past year-and-a-half reflects the successes and failures of Beijing's massive experiment with economic reform. The experiment, which has been underway since 1978, has touched virtually every sector of the economy. Under what China calls its "contract responsibility system," farmers now have effective control, but not ownership, of most of the acreage in China. Peasants determine, to a large degree, what and how much they produce.

Enterprises that formerly remitted all but a small share of their profits to the state now retain a much larger share.

Moreover, for the first time in over 20 years, individual entrepreneurs have been allowed to set up small businesses, such as restaurants, barber shops, and clothing stands, and actually to employ small numbers of workers.

PERFORMANCE IN MAJOR SECTORS

Economic performance in 1983–84, particularly in agriculture, looks quite impressive, statistically. Agricultural output jumped sharply as a result of both the contract responsibility system and the better-than-ever weather conditions. Grain output reached a record 387 million tons in 1983, and may top 405 million tons this year. Cotton production jumped 25 percent last year, to a record 4½ million tons. And another rise, perhaps as much as 10 or 15 percent, may be in the offing this year.

The energy sector provided Chinese policymakers with what was perhaps their most pleasant economic surprise of 1983–84, as primary energy output rose at about a 6-percent clip, the fastest pace in 5 years.

Oil production rose to 106 million tons in 1983, enabling China to export 15 million tons of crude, and output should hit a new record of 114 million tons by the end of this year.

Coal output topped 700 million tons last year, and probably will reach 760 million this year.

China's international financial picture also improved steadily over the past 18 months. International reserves now stand at more than $20 billion, the 10th largest worldwide, and China will run a fourth consecutive large trade surplus in 1984. Beijing has bor-

rowed very little over the past 2 years, and much of what it acquired came in the form of government-subsidized loans or money from international financial institutions at low interest rates. As a result, less than 6 percent of export earnings are required to service China's foreign debt.

The military has been asked to sacrifice somewhat for the tme being in order to help revive China's economy. Chinese budget statistics show defense outlays as a share of government spending falling moderately, from 17½ percent in 1979, during the border war with Vietnam, to 15.3 percent in 1982, and 13.7 percent last year.

Although data for 1984 are still unavailable, we believe the military expenditure figure remained at 13 to 14 percent of government spending.

The People's Republic of China figures probably understate total defense spending, but we believe they accurately reflect the recent trends. The military has so far accepted the need for sacrifice, with the understanding that as the economy improves the armed forces will be appropriately rewarded.

The statistics on industrial performance also appear quite respectable. Industrial production rose at an annual rate of about 11 percent over the past 18 months.

DEFENSE BURDEN

Senator PROXMIRE. Can I interrupt to ask: You have just stated that military expenditures may have slipped below 15 percent of government spending by now.

Mr. GATES. Yes, sir.

Senator PROXMIRE. Can you give us a percentage of GNP?

Mr. CARVER. We haven't done the same kind of costing things that our colleagues covering the Soviet Union have done. But we do have a GNP figure worked out in dollars, and I could sit down and crank a rough estimate out for you. The hesitations that the Soviet analysts have in doing this kind of thing are even more amplified in our group.

Senator PROXMIRE. Can you give us a ballpark figure? Would this be 10 percent of GNP, or 12, or 8?

Mr. CARVER. I will provide that information for the record.

Senator PROXMIRE. All right.

[The following information was subsequently supplied for the record:]

THE DEFENSE BURDEN

Beijing claims that it spent 17.7 billion yuan (about $9 billion) on defense in 1983. We calculate that China's GNP for that year was about $275 billion which yields a defense burden of only about 3.3 percent. CIA's military experts believe that the Chinese figure for military spending may understate actual expenditure levels by as much as 50 percent. Assuming this to be the case, the actual defense burden is probably closer to 7 percent of China's GNP.

Mr. GATES. An equally impressive performance has been achieved in their production of such consumer items as refrigerators, washing machines, fans, and TV's. Beijing has experienced some inflation, but at manageable levels of 5 to 8 percent.

In short, we estimate that China's real GNP grew about 8 percent last year, and even sharper growth of 9 to 11 percent can be expected this year.

Despite the impressive statistics, Chinese leaders have become increasingly dissatisfied with the industrial sector. When reforms were first introduced in 1978, it was not industrial growth that the government was interested in. In fact, Beijing said it would willingly sacrifice shortrun growth if, through reform, it could make its enterprises more efficient.

In this area, China has failed. Its domestic enterprises continue to be among the world's most inefficient, using, by some estimates, up to 3½ times more energy to produce a unit of output than the average less-developed country firm.

At the same time, energy shortages presently idle 20 percent of China's industrial capacity. Raw material consumption is also high, and has shown almost no sign of coming down.

The state calls for reductions in per-unit consumption of raw materials, have been answered instead by increases. Then, too, the quality of China's output remains very low. And labor and capital productivity have failed to improve under initial reform efforts.

Finally, when China released its grip on the industrial decision-making process, it also gave up some of the control it once had over macroeconomic activity. In the wake of that move, China has been forced to accept five consecutive budget deficits totaling more than 55 billion yuan, about $25 billion.

NEW REFORMS

Runaway local investment drained both capital and raw materials away from high priority infrastructure projects, and mounting price pressures showed up in budding black markets, speculative activity, and rising free market prices. For a while, the problems associated with the early reforms threatened to overshadow the agricultural gains. In the 1981 to 1983 period, China's Communist Party strenuously debated the question of reform. The argument revolved around whether to move rapidly ahead with new reform measures or to cut back on market-orientated practices in favor of tighter controls and more reliance on comprehensive state plans.

Earlier this year, however, party advocates of reform moved into a predominant position. As a result, the drive to restructure the economy has accelerated.

At the same time, the emphasis has shifted away from agriculture, where the results have been good, to industry, where little real progress has been made. By late June, Chinese economists publicly were calling for experiments with such market-oriented practices as forcing state banks to compete against each other, allowing enterprises to issue stock and bonds, and were even advocating reform of the price system. Such proposals would have been labeled heretical 5 years ago.

In early October, the state council issued provisional regulations on improving the planning system—a detailed document calling for, among other things, a major overhaul of China's complex planning bureaucracy. The meeting of the Third Plenary Session of the

12 Central Committee on the 20th of October firmly committed the party to economic reform.

The Plenum approved a document on the reform of economic structure that reiterated all the elements of earlier reform efforts, and went further than any previous document on important questions such as price reform. In essence, the party committed itself to a comprehensive restructuring of its economic apparatus, that, if fully implemented, will permit free market regulation in China to a much greater degree than elsewhere in the socialist world, with the possible exception of Hungary.

Why is the party now prepared to make such a massive assault on its urban economic problems?

First, the waste and inefficiency that characterized the industrial sector has reached intolerable proportions. Heavy industrial sector warehouses now store more than $10 billion in unusable machinery, while Chinese factories continue to produce mostly 1950 and 1960 vintage equipment. Chinese mills continue to produce large quantities of low quality steel but most industries complain of major shortages.

Then, too, the weakness of the urban economy began impacting on the agricultural sector. A hugh surplus of grain is presently accumulating in the countryside because the urban commercial system is incapable of transporting it to points of need. At the same time, consumer goods are not reaching the countryside in quantities sufficient to meet rural demands.

Beijing also chose to move now because it believes it is well positioned economically to survive the problems that will inevitably arise from the planned overhaul. Agriculture, foreign trade, and energy are all performing well above expectations.

Finally, and perhaps most importantly, the reform wing of the party is eager to push ahead while the 80-year-old Deng Xiaoping is still active and at the peak of his power.

Because this accelerated drive at industrial reform is in its infancy, assessing its chance for success is difficult. We can say, however, that implementation will be very tough. Major economic problems will begin surfacing immediately as price adjustments work their way through the system.

Bureaucratic infighting is bound to increase as power is redistributed. Some party and state officials can be expected to resist the entire program, since they would tend to lose power if the reforms succeed.

Price reform is unquestionably both the most essential and the most troublesome element of the reforms. The Chinese economy is shortage driven, and even rumors of price adjustment can spark panic buying and bank runs. Many Chinese citizens remember the dislocations caused by hyperinflation in the late 1940's. They react rapidly and sometimes irrationally to announcements of upward price adjustments.

Beijing has also had a difficult task in determining what to do with the nearly 20 percent of state-run enterprises that are now losing money. Factory closedowns on such a large scale would mean unacceptable unemployment problems and industrial readjustments. But to permit continued operation encourages inefficiency.

Financial problems also will continue to plague Beijing. While China has many of the fiscal and monetary tools it needs to control the macroeconomy, it has little practical experience in their use. Given the difficulties that even industrial economies have in using these tools effectively, Beijing will probably be very tempted at the first sign of major problems to resort to what it knows best—direct control.

Finally, political opposition will continue to threaten the reform program, and it is the most difficult factor to measure.

The mounting economic problems will provide ammunition to party and state bureaucracies that are already resisting change. Nevertheless, we are cautiously optimistic that Beijing gradually will get a good percentage of the reforms into the pipeline, and that the new program will achieve a measure of success.

We are struck, for example, by the straightforward, nonideological approach contained in the Plenum document. Chinese leaders are keenly aware of both the economic and political obstacles they face. By allowing 5 years to get the program into place, Beijing is calculating realistically the tremendous problems it will face in implementation.

Beijing's willingness to launch a frontal assault on irrational prices also bodes well for success. Western and Chinese economists alike have long viewed the irrational price system as a major stumbling block to urban reform, but until this year, party bureaucrats viewed the potential danger of price reform as too high to warrant any major experiment.

It appears now, however, that these planners realize that piecemeal reforms in the absence of rational prices may be worse than no reforms at all. In addition, by letting individuals set up service-related businesses and handle commercial functions, Beijing has unleashed forces that could markedly increase the speed at which economic transactions take place. A more smoothly functioning economy is a likely outgrowth of such policies.

OUTLOOK

On the whole, then, we believe that the industrial reform program China has devised is workable and will accelerate economic gains, albeit at a slower pace than occurred following the early agricultural reforms. Some inflation is to be expected, though we do not believe Beijing will experience wildly spiraling prices. For this to occur, the Government would have to be willing to sustain increases in consumer demand by printing money, something this fiscally conservative Government is unwilling to do. In fact, we are more concerned that Beijing's fear of inflation will cause it to overreact to initial price changes by cutting back price reforms. Such a move could stall the entire reform program.

If China is successful at getting its reform program into place, there are several important implications for the United States. In our judgment, implementation of the reforms would both broaden and deepen China's ties with the United States and the West.

The emphasis on technological innovation at the plant level, foreign capital acquisition and increased joint ventures will expand investment and trade opportunities for U.S. and Western business.

At the same time, however, the reforms will aggravate some current problems in United States-Chinese relations. It can be expected that Chinese enterprises will continue to push for greater access to Western markets, and pressure on Washington to lower trade barriers probably will increase.

Similarly, Beijing will probably press harder on technology transfer in response both to its needs for economic and military modernization and the demands of its own enterprises. It is also likely that China will reduce its grain imports from the West, as its agricultural production continues to improve.

Beijing's success with economic reform could also prove to be a tempting example for other countries struggling with central planning. Beijing reportedly is already encouraging the North Koreans to learn from Chinese reforms and relax their tight control over the economy. As China's program proceeds, other countries, including some LDC's and even a few of the East European nations that China patterned its earlier forms after, may consider making wider use of market-oriented programs.

Having said this, I must conclude, still, on a cautious note. Several factors could derail China's reform program completely. For example, the death of China's 80-year-old leader would remove from the scene the most powerful advocate of reform. Deng's most likely successors are also deeply committed to reform, but in his absence, they probably would not be able to push the program to the extent he has done.

Other problems, such as a sharp upsurge in speculation and economic crime or several years of bad weather could, over the longer term also tip the political scales against reform and lead to retreat. Thank you.

Senator PROXMIRE. I appreciate that.

Both these presentations have been extremely good. And as Richard Kaufman just mentioned to me, this is a useful corrective for the feeling of Chinese euphoria, that they're going to be the Adam Smith free enterprise economy any day now. I think the note of caution is very welcome.

In your discussion of improvements and recent successes in Chinese agriculture, you say that improved weather and price increases have played an important role together with market-oriented rural reforms.

First, weren't the price increases part of the reforms, and second, can you assign weights to the roles of reform and weather in recent improved performance?

PRICES AND STRUCTURAL CHANGES

Mr. CARVER. There is some question about exactly what you include under the label of reform. The people in our shop who have examined the agricultural sector most carefully choose to distinguish somewhat between price adjustments, which China has tried periodically over the past 30 years, and the recent structural changes such as introduction of the contract responsibility system. The latter changes we are calling "economic reform."

Our experts believe that even if the commune system had been left in place, and the economic structure had remained basically as

it was, increased prices would have elicited an output response. Nevertheless, the freedom that the Chinese have given the farmer to make production decisions and to carry out those decisions has undoubtedly strengthened the output response.

As to how to weight each of these factors in terms of their impact on production, there is a great difference of opinion between experts both within our office and outside.

WEATHER

Weatherwise, the Chinese say that 1983 was in many ways the worst year they have had in some time. But, in terms of grain and cotton, they had the best harvest they've ever had. So there's some indication that weather, while it has played a role in this, is not playing as important a role as perhaps some people would think.

Senator PROXMIRE. It sounds like it might be playing a preverse role.

Mr. CARVER. In what sense?

Senator PROXMIRE. In other words, if they had these bounteous crops of wheat and cotton, and they had it in spite of bad weather, it sounds as if their reforms are more responsible than they would be, if the weather had been the same.

Mr. CARVER. I'm not sure that's the case. If the weather had been better, they might have received additional gains beyond what they achieved. What I think we can say is that the agricultural reforms are proving capable of generating production gains even under adverse climatic conditions.

We can start to say, sure, the weather's always been a factor, but the price adjustments, and the introduction of the contract responsibility system, are perhaps the major elements in this whole expansion we've seen in ag production.

Price reforms cannot be discounted. My feeling is, the price reforms have probably been at least as important as the contract responsibility system. The Chinese continue to rejigger prices, and they've seen just tremendous shifts in resources out of certain products and into other agricultural products, in very short order, with changes in prices.

PERCENTAGE OF POPULATION IN AGRICULTURE

Senator PROXMIRE. One of the most interesting contrasts between our country and the Soviet Union, and I presume, China, too, although it would be interesting to get your figures on this, is the enormous proportion of the Russian population that is in agriculture compared to this country.

Now the figures that I had a few years ago were that this country, less than 3 percent of our people were in agriculture, that is, were on farms producing, working on farms as their principal occupation, whereas, in Russia, it's closer to 30 percent, or was.

On China, I don't have any figures at all.

Could you bring me up to date on Russia and also tell me what the proportion of the people in China who are involved in food production is, that is, who are on farms?

Mr. NOREN. Perhaps 20 to 25 percent, I believe, of the labor force is now working in agriculture. It was 30 percent back in 1960.

Senator PROXMIRE. So they not only had a better crop year, but there's more productive work?

Mr. NOREN. This is in the Soviet Union.

Senator PROXMIRE. That's right. We were told by the CIA a few years ago that it was 30 percent. I remember I was so startled by the figure, it remained with me.

Mr. NOREN. I believe that figure for 30 percent refers back to 1965 and the 1970's. They've made considerable progress in reducing the labor force in agriculture through the late 1970's, they've made less progress since then.

Senator PROXMIRE. So it's about 20 to 25 percent now?

Mr. NOREN. Of the labor force working in agriculture.

Senator PROXMIRE. How about China?

Mr. CARVER. Eighty percent of China's population is in the rural economy.

Senator PROXMIRE. Eighty percent?

Mr. CARVER. Eighty percent—800 million people in the countryside. Some experts estimate that as much as 70 percent—this is the highest estimate—of this rural labor force is surplus labor, you could pull them off the farms without hurting production.

Senator PROXMIRE. What you're telling me is that you have about 80 percent of the people in rural areas, and they've mostly engaged in agriculture.

Mr. CARVER. At one time of the year or another.

Senator PROXMIRE. But about 70 percent of that 80 percent, or 56 percent of the population, to get a precise calculation, is surplus?

Mr. CARVER. That's the high figure, and as I say, it's a very rough figure, but I think it gives you an order of magnitude as to the size of the problem and to the potential if you could put those people into productive employment. The Chinese themselves say that by the year 2000 they hope to have this figure down to about 30 percent. Their goal is to have 30 percent or less of the labor force engaged in agricultural production.

Senator PROXMIRE. A big share of them are going to be unemployed.

Mr. CARVER. That won't take place. They're basically unemployed now, but they continue to receive a salary and are not unemployed in the Western sense of the word. China will not permit a large amount of Western style unemployment.

Senator PROXMIRE. Think how many people that is. That's between 500 million and 600 million people.

Mr. CARVER. Actually the figure is not that large because much of the rural population is too young or too old to be employed. Nevertheless there is a tremendous amount of surplus labor. All Beijing has to do is give many of these rural people the sign; that is, allow them to go into the city and set up barber shops, clothing stands, et cetera, and you immediately get an influx. They're already facing problems this way. Their system is not geared to having people move freely from point A to point B. As a matter of fact, it's geared to preventing people from moving from rural areas to urban areas. The government is trying to make changes right now that will allow part of this labor force, not to move to Shanghai and Beijing, but to move to small towns that they hope will form in the middle of these green belts.

BUDGET DEFICITS

Senator PROXMIRE. You mentioned the large and rising budget deficits starting in 1977, which forced cutbacks in investment and transportation.

What had been the trends in other areas of capital investment and what are the causes of those budget deficits?

That should be 1979. I beg your pardon.

Mr. CARVER. 1979 was their largest deficit. In 1979 and 1980 they had sizable decifits. The initial reaction to the deficits was to cut back government spending. At the same time they counseled their industrial sector to also cut back investment. They achieved the cutbacks in government spending, which came mainly out of major infrastructure projects. But in the private sector, what we would have to call the noncontrolled sector, there were big increases in investments.

Basically, there are several reasons for the deficits. Probably the most important is that when China adjusted prices, they raised procurement prices, meaning the state paid the farmer more, but continued to sell the grain to cities for exactly the same price that they did before. Of course this led to a tremendous subsidy.

Another factor was the readjustment in policy which shifted resources away from heavy industry to light industry. Heavy industry generated a large part of China's tax base, and when production began to slow down, and even decline, tax revenues fell. They had their expenditures going up at the same time their tax revenues were tapering off.

DEFENSE SPENDING

Senator PROXMIRE. You indicated in your prepared statement that Chinese do not reveal much about their defense spending.

Is it roughly as difficult to know what they spend, as it is to know what the Soviets spend? If so, doesn't that mean we know less about the Chinese military, in view of the fact that we place far less emphasis on gathering and assessing information about China's defense?

Mr. GATES. I think that based on Mr. Carver's earlier comments, we do have even greater uncertainties in the realm of Chinese defense spending than we do for the Soviet Union. By the same token, again, I would go back to comments I made earlier. Even so, we have a pretty good fix on the actual military capabilities of the Chinese, in terms of the forces that they have, the equipment that they have, their military research and development, the programs, the new weapons systems that they're developing, whether they're submarines or missiles, and so on.

Senator PROXMIRE. How about their strategic capability?

Mr. GATES. I would say that our capability there is probably the best of all.

Senator PROXMIRE. What's that?

Mr. GATES. I would say that our ability to accurately assess their strategic capabilities is probably the best of any aspect of their military.

Would you like to add anything?

Mr. CARVER. I think that's accurate.

As Mr. Gates said, we basically have a good feel for the direction, for the kind of sacrifice that the military has so far been willing to accept in the name of economic modernization.

STRATEGIC FORCES

Senator PROXMIRE. How does the Chinese strategic capability compare with the United States and the Soviet Union? Factor of 10? Factor of 20? And with France and the United Kingdom?

Mr. CARVER. I would say we should field that question and bring it back. Our military experts aren't here. My own feeling is that they're just not even in the same ballpark as the United States or the U.S.S.R., especially if you're talking about strategic weapons.

Senator PROXMIRE. I realize that. I realize they're not in the same ballpark as the United States and the Soviet Union, but I just wondered what the discrepancy is. Is it on the order of, as I say, 10? 20?

Mr. GATES. You're looking at a country where their strategic missiles can be counted in a few 10's.

Senator PROXMIRE. Compared with a few thousand?

Mr. CARVER. Their ships, we could add, are basically coastal ships. They are not a blue water navy.

Senator PROXMIRE. And their submarine fleet? Do they have nuclear weapons on their submarines? How about their air force? Does that have a nuclear capability?

Mr. CARVER. Again, we should really bring the military people in to talk to you more closely on that.

Senator PROXMIRE. You're going to give some of that to us?

Mr. GATES. We'll respond.

DEFENSE BURDEN

Senator PROXMIRE. Let me just pursue that question I asked a little bit earlier, just one more time. Maybe you can't give it to me directly, but it would be very helpful if you could make an approximation.

In a discussion of the Chinese defense sector, you indicated that the burden of defense has been reduced somewhat. I realize that you have no precise estimates of the proportion of GNP that go for defense, but can you say whether it is closer to the United States figure of 7 percent, or the Russian figure of 13 to 14 percent?

Mr. CARVER. My gut feel is that it would be much closer to the U.S. figure, and when I respond, I will be more accurate.

Let me say this: There's been a lot of fat in the Chinese military budget that's been cut out without really deleting too much of their military capability, as small as it is.

For example, they had a tremendous capital construction corps. That was part of their military budget. When they cut that military budget, that corps of people was freed up and sent back to private practice. China's military capability, however, was probably not severely hurt.

So our military people tell me that while the Chinese military has definitely sacrificed, we should not overstate the degree to which it has impacted on military capabilities.

The military continues to get a lot of technology. They have gotten into the business themselves of exporting military weapons, and this has been generating foreign exchange for them.

GNP

Senator PROXMIRE. On the last page of your prepared statement, you have a table showing selected economic indicators in China. You have the growth of the GNP and the gross value of industrial output, and so forth.

Can you tell me what their GNP is?

Mr. CARVER. Well, we do rough estimations of GNP on an annual basis, and have it in the neighborhood of $300 billion.

Senator PROXMIRE. It used to be about the same size as Italy's. Can you give me any countries that are about the same GNP as China?

Mr. CARVER. Not right offhand. Again, I can put that in for you.

Mr. NOREN. Senator, if I may add, you're correct, total Italian GNP in 1983 in U.S. dollars was $355 billion.

[The following information was subsequently supplied for the record:]

Comparing China's GNP With Major OECD Countries

[In billion of U.S. dollars]

United States	3,305
Japan	1,156
West Germany	655
France	[1] 543
United Kingdom	460
Italy	350
Canada	317
China	275
Spain	156

[1] 1982 figure.

Senator PROXMIRE. It's a little bigger now. Of course, they have grown more rapidly than just about any other major country, in GNP.

I notice you have a 7, 5.2, 3, 7.4, 9, and 10. Those are very, very healthy growth figures.

Mr. CARVER. Again, I don't think that's necessarily a good sign. The Chinese are not necessarily pleased at that. As we said in the prepared statement.

Senator PROXMIRE. Why?

Mr. CARVER. Their feeling is that what they really need is an improvement in efficiency. They continue to produce a lot of junk, basically, and the state continues to have to procure that stuff at high cost. Their warehouses are full and yet their factories are crying for better machinery, equipment, and steel.

So what China wanted was growth rates more in the neighborhood of four—well, their plans have been for anywhere between 4- and 6- percent growth. That's what they were asking for.

Senator PROXMIRE. Well, that's a good helpful modification.

ECONOMIC GAINS OVERSTATED

Your discussion of the problems of inefficiency and waste in the industrial sector suggests recent reports of Chinese economic success may be somewhat exaggerated. Do you agree that a big question mark remains as to whether China will overcome its economic problems and be able to maintain the pace of economic reform?

Mr. CARVER. That certainly is a key question. The press is overplaying how well the Chinese have done. The Chinese themselves have been very, very pragmatic, for probably the first time.

Senator PROXMIRE. Are you talking about our press?

Mr. CARVER. Our press, the Western press.

The Chinese themselves have been very, very pragmatic in saying: "We have done well in agriculture, but in the industrial sector, our performance has been bad." They recognize the weaknesses. Party members, for the first time are being told to prepare for problems that will inevitabley arise when reforms go into place. And to attack new problems not by labeling people as capitalists or something else but by trying new reform.

Senator PROXMIRE. I think that's pretty hard to avoid. We have an understandable, and, I think, a proper, bias in favor of free enterprise. I am sure all of you would agree with that.

So when they move toward a little freedom, we say, "See how well they're doing?" and we would like to feed on that as evidence of how superior our system is.

It is superior. But, I think we tend to overstate it.

Mr. CARVER. We should probably also say that in terms of the free enterprise, we feel that probably about 2 percent of the Chinese labor force, urban labor force, right now is engaged in these kind of what you could really call free enterprise—type of activities: small shops, et cetera. So, the sector of the economy that is uncontrolled is still quite small.

PANIC BUYING

Senator PROXMIRE. You explained that very well. You point out that the improvements have been by giving incentives to cooperative entities which are not free, competitive operations. And then a price modification, rather than the fact that you have as you say, a lot of people getting into barber shops and that kind of thing, which is fine, but it can't account for the improvement.

An example of the problems that remain in the background, some panic buying, you report, occurred last month in the—and the fact that you conclude that panic buying would be inflationary in the short run.

Can you give us an idea of the magnitude of these problems, whether panic buying has stopped, and inflation? And I would also like to discuss the problem of unemployment.

Mr. CARVER. The feeling we have is that there were pockets of panic buying and bank runs but the Chinese were quick to stamp these out. They simply refused to let people pull their money out of banks, they also came out strongly with proclamations that no one would be allowed to change prices for a while, and when changes were made they would be gradually with incomes being adjusted at the same time.

So I think so far the scale of this sort of thing has been very, very small. We highlight it because the potential for major problems is there, and every time the Chinese talk about price reform they raise the spector of bank runs and panic buying.

The Chinese are so sensitive to this that they react quickly whenever problems occur. We are more concerned that they will overreact to this sort of thing than we are that they will let price problems get out of hand.

POSSIBILITIES FOR LEADERSHIP CHANGES

Senator PROXMIRE. You warned us about the effect of Deng's death. You also indicated that his successors shared his view of the reforms, or his most immediate successors. But they wouldn't have the same force and power that he has.

Can you give us a little more specific assessment of the prospects for the reform movement to prevail in the event of Deng's death or removal from office in the near future?

Mr. CARVER. You know, it's speculation, but I will give you my best feel for what could happen.

The two people next to Deng in power are Zhao Ziyang and Hu Yaobang. Both of them are very openly proreform. Even the people in the top echelons of the party who are not strong advocates of reform—and we do have indications that some important leaders are not fully on board—are not Maoists. They are not going to argue for a retreat all the way to the left. There are people who would argue that free enterprise should not be allowed to operate to the degree that reformers are now advocating. These opponents argue for a pull back. They contend that free enterprise should operate only at the very fringes, and a tight central plan should regulate the bulk of the economy.

So, whereas during the 1960's and early 1970's we had extremes—Maoists who argued for strict Chinese Marxism opposed to a few others like Deng who were at the other extreme—now the band has narrowed significantly.

Even the people who advocate a retreat from reform are really talking about a retreat to a milder kind of reform. Although this group does not wield much power right now, if the reforms begin to bog down, I think these leaders would resurface, and there's definitely the capability among those people to slow the reform process.

Having said that, the ag reforms have been widely accepted by about 80 percent of the population, and it will be very, very hard to turn those people around.

So my best guess would be that any new leadership would not be able toundermine the program to a major degree; that, in fact, even when we do get succession, we will continue to have reform.

Again, that's just my guess.

CHINESE-SOVIET RELATIONS

Senator PROXMIRE. Mr. Gates, would you briefly discuss the recent developments in Chinese-Soviet relations and the prospects for closer ties between them?

Mr. GATES. There were some developments about 1½ or 2 years ago that suggested that the two parties, for reasons of their own, probably related to the relationship of each to the United States, was interested in moving closer to one another to establish a closer bilateral relationship.

There were a number of very small steps that were taken, and we anticipated, or at least raised the prospect, that might involve some longer term, significant improvement in relations. Frankly, this just hasn't happened. There has been a slight warming in state-to-state relations. There have been some contacts between the two parties, some negotiations. Trade between the two is increasing rapidly, but from a very small base.

They are still planning on having a Soviet Deputy Prime Minister, or Premier, if you will, visit China, a visit that was canceled earlier.

But on the whole, it appears that the Soviets are totally unprepared to meeting the Chinese preconditions for a significantly improved relationship: Getting out of Afghanistan, ending their support to the Vietnamese, and getting the Vietnamese out of Kampuchea, getting out of Mongolia, and so on. There's just no sign that the Soviets are prepared to undertake any of those things, and absent that, any improvement in relations, even on a state-to-state basis, will be, in our view, quite limited.

[The prepared statement of Mr. Gates follows:]

PREPARED STATEMENT OF ROBERT GATES

Soviet Economic Performance, 1983-84

Introduction

In our past testimony we have analyzed Soviet economic performance and military spending over the last two decades. Summarizing that testimony, we reported that economic growth in the USSR was relatively robust during the decade of the sixties and the first half of the 1970s. The mid-1970s, however, marked a turning point in the economy's fortunes. Economic growth began to decelerate and eventually fell below 2 percent for three consecutive years--1979, 1980, and 1981. But the economy has been doing somewhat better recently. GNP increased by about 3 percent in 1983 and growth continues to be higher in most sectors in 1984, although the USSR's national product will rise by only 2 percent this year because of a poor harvest.

Our testimony this year will focus mainly on the developments of the past two years. First we will review the performance of the Soviet economy and its major sectors in the last two years in an effort to assess the extent of the economic upturn and the distribution of the modest growth dividend available to the leadership. We will try to identify the reasons for the improved performance and weigh their relative importance. We then will give our assessment of Soviet economic prospects over the next few years and for the second half of the 1980s and discuss the implications for the West in general, and the United States in particular.

Economic Performance in 1983 and 1984

Soviet economic performance picked up marginally in 1983, a trend that has continued in most sectors of the economy through October of this year. The 3-percent increase in GNP in 1983 represents an improvement over the poor showing the four previous years when growth averaged only about 1-1/2 percent per year. This better performance does not mean that the economy has rounded

the corner, leaving its economic difficulties behind, however. Growth of GNP is still well below the rates posted in the early and mid-1970s and thus is unlikely to provide much relief for the leadership as they search for ways to devote more resources to both defense and consumption without sacrificing industrial modernization.

USSR: Growth of GNP and Selected Sectors of the Economy

	Average Annual Percent Change				
	1971-75	1976-78	1979-82	1983	1984[c]
GNP[a]	3.7	3.7	1.6	3.2	2
Agriculture[b]	-0.4	5.2	-0.9	6.3	0
Industry	5.9	3.8	2.4	3.4	3.5

[a] Calculated at factor cost.

[b] Excludes use of farm products within agriculture but does not adjust for purchases by agriculture from other sectors.

[c] Preliminary.

Some of the improvement in Soviet economic growth in 1983 and 1984 represents a rebound from 1982's low growth in much the same way that the US economy records rapid rates of growth in the initial stages of recovery from a recession. Moreover, for the Soviet Union, the trend in GNP can be a misleading indicator of the underlying health of the economy because of its sensitivity to the ups and downs of agriculture. For instance, during the worst of the slowdown beginning in 1979 and continuing until 1982 and during the subsequent recovery, the change in agricultural output explains roughly two-thirds of the change in GNP growth even though agriculture accounts for only about 15 percent of the national product.

An alternative measure of the condition of the Soviet economy excludes

agriculture from GNP to remove most of the volatility of agricultural performance. Abstracting from agriculture in this way gives a slightly different picture of the economy since 1975 (figure 1). First, it shows that a substantial part of the slump in GNP growth from 1979 to 1982 is the result of unusually poor harvests in most of these years. The rate of increase of non-agricultural GNP fell by only one percentage point compared with the 2-percentage point decline in the growth of total GNP. Second, the economic recovery in 1983 and 1984, although heavily influenced by agricultural performance in 1983, also reflected improved performance in industry and key service sectors outside of agriculture. Growth in non-agricultural GNP has continued in 1984 at about the same rate as in 1983. But because of the poor grain harvest, overall GNP growth is likely to be around only 2 percent this year. Problems in branches producing industrial materials and fuel and the shortfalls in agriculture this year could, moreover, curb economic development once again in 1985.

Agriculture

Farm output rose by 6.3 percent in 1983, reaching an all-time high. Nevertheless, the value of total agriculture output in 1983 was less than 5 percent greater than the previous record achieved in 1978. The livestock sector performed particularly well last year; production of meat and milk reached new records. Some 16.4 million tons of meat were produced, one million tons more than in 1982. The grain, potato, and sugar beet crops also registered increases over the depressed 1982 levels.

Net agricultural production is expected to remain at roughly the 1983 level this year. Output of livestock products will rise again, but most crops will fall. The increased emphasis on production of forage crops such as hay and silage--aided by longer and more favorable growing seasons in both 1982

and 1983--boosted feed supplies and led to higher milk yields and heavier slaughter weights. On the other hand, the USDA estimates that grain production in 1984 will be only about 170 million tons--25 million tons below its estimate for 1983.

USSR: Output of Selected Agricultural Products[a]

	Average Annual 1976-80	1981	1982	1983
Grain[b]	205	158.0	180.0	195.0
Potatoes	82.6	72.1	78.2	83.1
Sugar beets	88.7	60.8	71.4	81.8
Cotton	8.93	9.64	9.28	9.22
Meat	14.8	15.2	15.4	16.4

[a] In million metric tons.
[b] See table 5 in appendix B.

Industry

The 3.4-percent increase in industrial production in 1983 was the highest since 1977. Growth at about the same pace seems likely in 1984, although earlier in the year prospects appeared brighter than they do now. Industry has thus almost returned to the rate of growth experienced in 1976-78, but not to the much higher rates of the first half of the 1970s (figure 2).

Industrial Materials. The most significant improvement has been in sectors producing industrial materials (figure 3). These industries, which produce the raw materials and intermediate products used throughout Soviet industry, faltered in the last half of the 1970s. Their sluggish performance had transformed some of the sectors into bottlenecks as plan requirements outstripped domestic supplies. In some cases, notably steel, imports have had to be increased to make up some of the difference.

In 1983 and 1984, production in these branches grew by 3.6 and 3.1 percent per year respectively, compared with an average growth of 1.4 percent

during 1979-82. The turnaround in the fortunes of the ferrous and forest products sectors was especially helpful in easing the industrial materials situation. In addition, chemical output has increased as much in the last two years as in the previous four combined. Nonetheless, there are already indications that the recovery in industrial materials has begun to lose steam during 1984, casting doubt on its strength.

Energy. Unlike industrial materials, the performance of fuel industry as a whole has deteriorated even further (figure 4). The combined value of output of fuels grew at about 1 percent a year in 1983-84 compared with 2 percent during the worst slowdown years. The fall in coal production continues, and oil production has stagnated this year. An important offset to the coal and oil picture is the robust growth in gas output, which hardly slowed during 1979-82 and has accelerated slightly the last two years. The electric power sector has also enjoyed a resurgence as a result both of more reliable fuel supplies and the influence of faster economic growth on the demand for power.

Whether slow growth in the fuels sector will ultimately brake the recovery in industry depends on the success of energy conservation and Soviet hard currency requirements. In 1982 and 1983, some progress seems to have been made in reducing the consumption of fuel per ruble of GNP, permitting Moscow to increase its sales of oil to the West.

Industries Supporting Investment. The performance of the industries supporting investment shows a stabilization in the growth of machinery production and some pickup in the output of construction materials. The planners must be distressed by the apparent failure of civilian machinery to rebound along with the rest of the economy. During 1979-82, this branch had been about the only the bright spot in the entire economy, even though its

growth had also slowed. This industry is important because it produces the machinery and equipment used to promote future growth.

Output of construction materials on the other hand, began to rise at a comfortable rate after falling in 1979-82. Shortages of construction materials and metals had limited construction activity, so this reversal will help the construction-intensive part of the Soviet investment plans, especially housing and the Food Program.

Consumer Nondurables. On the whole, the industries that cater to the Soviet consumer did no better in 1983-84 than in 1979-82 (figure 5). The growth of output of soft goods continued to decline, to a rate of only about one percent per year. But production of processed foods grew slightly faster. To a large extent, performance in this sector is the result of larger harvests of vegetables and fruit and the continued large imports of grain that were instrumental in spurring growth in output of milk, meat, and eggs.

Transportation

During the past two years, the better showing of the railroads, which carry 70 percent of nonpipeline traffic, is the most significant development (figure 6). A smoothly running transportation system is particularly important in a country the size of the USSR because disruptions in deliveries that hurt one plant can quickly multiply in effect throughout the economy. We believe that the severity of the slump from 1979 to 1982 can be partly blamed on gridlock in the transportation sector. Thus, a sizeable portion of the industrial recovery can equally well be attributed to improvements in this sector's performance.

The picture is mixed with respect to other modes of transportation. The amount of gas transported by gas pipelines continues to rise at double-digit rates, but traffic on highways and rivers has declined.

Foreign Trade

The Soviet hard currency position by mid-1984 was quite solid. In 1983, Moscow balanced off an increase in imports of machinery and equipment and pipe (needed to built the new gas export pipeline) with a reduction in agricultural imports. At the same time hard currency exports rose by almost half a billion dollars, primarily because the USSR reacted to falling oil prices by increasing the amount of oil exported to the West. The rise in the volume of oil sales for hard currency was made possible by an increase in oil obtained from OPEC countries in partial payment for past deliveries of arms and a tight-fisted attitude toward deliveries to Eastern Europe. The net result of these transactions was a gain of almost $300 million in Moscow's merchandise trade balance for the year.

The trend in Moscow's hard currency position continued to be favorable in the first six months of 1984. Both exports and imports, measured in current prices, fell compared with the same period the previous year, but imports dropped by almost $1.3 billion more than exports. Machinery and pipe deliveries have fallen off as the Urengoy-Uzhgorod gas export pipeline nears completion. Arms sales were also down. The volume of oil exports to hard currency OECD countries, however, apparently increased by at least 6 percent, offsetting a roughly 5-percent drop in average oil prices.

Although the Soviet hard currency trade surplus for 1984 as a whole may be higher than the $4.7-billion surplus realized last year, the overall improvement is not likely to be as marked as it was during the first six months.

-- The USSR will find it more difficult to raise the volume of oil exports because domestic production has leveled off.

-- Soft world oil prices will reduce hard currency receipts for a given volume of oil exports.

-- Soviet grain purchases will increase sharply in the second half of the year. Soviet hard currency grain purchases in the 1984 calendar year will probably exceed the 1983 bill by about $2 billion.

-- We do, however, expect imports of other agricultural products and machinery and equipment to continue to fall. Soviet equipment orders have fallen from $6.9 billion worth in 1982--when large orders for the export pipeline were placed--to $2.2 billion in 1983 and to less than $500 million in the first six months of 1984.

Moscow's healthy international financial position (and the waning of sanctions) has been recognized in the increased credit worthiness assigned to the USSR by Western banks. Soviet assets in the West are at near record amounts, and Moscow's gross debt to the West is at manageable levels--the ratio of debt service to hard currency receipts is currently a respectable 15-16 percent.

The Beneficiaries of Better Economic Performance

How the leadership responded to the improved economic picture in 1983 and 1984 provides a window on the regime's current policies and intentions.

- Defense

Defense has been considered to have priority in the allocation of resources in the Soviet economy. We cannot yet conclusively establish how the

economic recovery affected defense spending, however, or, for that matter, how defense spending might have impinged on the recovery. Nevertheless, since reporting to you last year, we have noted evidence of some acceleration in the rate of increase in defense spending.

The Burden of Defense. To understand the role of defense in the economy, it is important to measure how defense diverts national resources from other purposes. One such measure is the share of GNP allocated to defense spending. In the Soviet Union, this amounts to 13 to 14 percent of GNP, which is considerably higher than the comparable 7-percent figure for the United States. The defense share of Soviet GNP has remained roughly constant since 1965 because the growth of defense spending has matched overall economic growth. When economic growth slowed after 1975, defense spending growth slowed correspondingly.

This ratio of defense spending to GNP simply measures the trend in average share of all resources going to defense. Certainly the impact of defense falls unevenly on different parts of the economy. Material inputs must not only be made directly available for defense, but other resources are needed indirectly as inputs to produce the materials used for defense.

Some key industries must devote especially large shares of their output to support defense programs (figure 7). For example, more than 25 percent of all machinery production is allocated to military procurement even though procurement is no more than 7 percent of GNP. In the process, resources are denied to the civilian sector that otherwise could be used to promote economic growth through investment or to bolster consumer morale by increasing the supply of consumer durables. In addition, as much as a fifth of all metallurgy production, a key input for construction and machinery production, may be needed to support procurement. That the metallurgy industry has

encountered considerable difficulties in sustaining the growth of output in recent years makes this large share all the more significant to civilian industries. Other industries that contributed--directly or indirectly--significant shares of their output in 1982 to support military procurement include chemicals, electric power, fuels, transportation and communications, and forest products. If other resource categories of defense are taken into account, such as O&M and RDT&E, the military demand on these industries would be even greater.

The true burden of defense includes many intangibles associated with defense activity that cannot be easily measured in quantitative terms. Examples of some that would raise the burden include giving the military establishment priority access to:

-- The highest quality raw materials for defense industry;
-- Transportation and distribution of raw materials for defense purposes;
-- The best industrial workers for defense industry;
-- The national pool of research and development talent; and
-- The best, most advanced machinery.

Some other intangibles could lower the burden. Examples of these include:

-- Using military construction troops on civilian projects;

-- Sending troops and military trucks to help with the harvest; and

-- Training largely untrained and unskilled non-Slavic minorities.

Finally, there are other activities that might be construed as defense-related, which we do not even consider in our estimates. This would include subsidized weapons sales, support for surrogates such as Vietnam and Cuba, civil defense programs, the dispersal and hardening of industrial sites, many intelligence activities, some communications facilities, and joint purpose projects, such as the BAM Railroad and city subway systems. Although we have not been able to measure these activities, it is clear that they would imply a defense burden higher than our estimate of 13 to 14 percent of GNP.

Defense Spending Trends. In the ruble estimate, we use constant prices (1970 is the base year) so that we can measure the real growth in defense--that is changes in military manpower, the volume of procurement and construction, and the scale of research and development (RDT&E) and operations and maintenance (O&M), excluding the effects of inflation. Budgetary discussions in the USSR are presumably often conducted in terms of current price data, however. Such figures, if available, would show higher growth than our constant price estimates because of the inflation that characterizes the Soviet economy generally. Nonetheless, so much of Soviet planning is conducted in physical rather than financial terms that sufficient information is undoubtedly available to the leadership to permit them to identify the real trends underlying expenditures in current rubles.

There have been two distinct periods in Soviet defense spending since 1965. Before 1976, growth in total defense spending had averaged about 4 to 5

percent per year; after 1976, the rate of increase in spending dropped appreciably, to about 2 percent a year.* Nevertheless, spending levels were so high that the defense establishment was able to continue to modernize its forces and to enhance substantially its military capabilities. Between 1976 and 1983, the Soviets purchased 1,100 ICBMs and more than 700 SLBMs for their arsenal of strategic forces--even while they were adhering to the SALT II restrictions and spending in this category was declining. At the same time, they procured about 300 bombers and 5,000 fighters, including the MIG-23/27 Flogger fighter and the Backfire bomber. The modernization of the ground forces proceeded through the introduction of more sophisticated armament. Some 15,500 new tanks were added to the forces, including the costly T-72 and T-64 tanks. Finally, the Soviet naval buildup continued. During this period, the Soviets acquired substantial numbers of major surface combatants, nuclear-powered ballistic missile submarines, and attack submarines.

Despite the scale of the ongoing Soviet defense programs, the growth of spending did slow. The impact of the slowdown can be seen by reviewing trends in the outlays allocated to the various military services and the trends in outlays in major resource categories (procurement, construction, personnel, O&M, and RDT&E). The behavior of expenditures for the military services provides insights into the competition among conflicting interests in a period of slower growth in defense. The most striking feature of service spending trends is that all services shared in the reduced growth in spending. Before 1976, total outlays of the services increased by 3-5 percent annually. Starting in 1977, however, the rate of growth of total spending in all the services decreased substantially. Some services were hit harder than others;

* Unless specifically stated, all defense spending growth rates are measured in constant 1970 rubles.

for example, total outlays for the Strategic Rocket Forces and Air Defense declined in absolute terms after 1977.

Trends in spending on the various resource categories before and after 1976 demonstrate that the main source of slower growth in defense spending was a stagnation in spending for military procurement after 1976. Year-by-year estimates of the level of total defense spending and outlays for procurement since 1965 (figure 8) confirm this judgment.

Could we be wrong about the procurement slowdown? this is a reasonable question that has been raised, in part because our building block (item-by-item) approach toward estimating procurement is obviously subject to uncertainty. We have audited our results to examine three possible sources of uncertainty: the physical estimates of military production; the cost of the new sophisticated Soviet weapons systems relative to costs of older systems; and possible increases in the real cost of defense production caused by declining productivity since the mid-1970s (which means that more resources might have been required to produce the same product).

Based on this audit we have reasonable confidence in our estimates of the level and trend of Soviet military procurement.

-- We have considerable confidence in our production estimates for large programs, which make up the bulk of procurement.
-- We also found that program costs for the most expensive and complex systems would have to be substantially in error to raise procurement growth back to pre-1976 trends.
-- Productivity changes in Soviet industry were not

large enough to alter our judgment about recent procurement trends.

Smaller increases in spending in the other categories of Soviet military programs, however, also contributed to slower growth in defense spending. After 1976, for example, the estimated cost of operations and maintenance grew about half as rapidly as before the slowdown. Since 1976, the main driver of defense spending has been the rapid growth in RDT&E; in the earlier period, procurement had been the leading source of growth.

The Procurement Slowdown

Why did Soviet procurement stop growing after 1976? Many explanations have been offered, including policy decisions, technical difficulties, manufacturing constraints, and industrial bottlenecks. But there is still disagreement as to whether one factor dominated or even if the list is complete.

Policy decisions. We would note that the stagnation in the level of procurement lasted for at least 7 years--from 1977 to 1983. This plateau arguably lasted too long to be the result exclusively of bottlenecks or technological problems. In a period so long, the leadership of the Soviet Union could have used its control of industrial priorities to ensure a higher rate of growth of military procurement. Older-generation weapons could have been kept in production while problems with new systems were ironed out, or once the problems were overcome, the new systems could have been produced at catchup rates. We believe they chose to pursue neither alternative.

In deciding to hold procurement growth down the Soviet leadership in the mid-1970s may have viewed the external threat as manageable and the existing high level of procurement as enough, possibly recognizing that the USSR was

entering a period of generally slower economic growth and counting on a continuation of the decline in US military spending. But even if a policy decision was made to put a temporary though high cap on military procurement, other factors clearly played a supporting role.

Other Factors. Modern Soviet weapons embody ever higher levels of technology. The Soviets could be experiencing some difficulty, particularly in the R&D phase, in solving technological problems encountered in producing new weapons. Even after production of new weapons has begun, the Soviets may have encountered delays in achieving a high level of serial production of some high technology weapons systems in recent years.

The shortages of key materials and transportation problems that affected much of Soviet industry since the 1970s clearly may have also affected defense. Soviet industrial growth as a whole has been slower since 1975 than in the past. Despite the traditional priority accorded to defense it has become more difficult to isolate defense from these economic disruptions.

Defense Spending During the Recovery

What can we say about defense spending in 1983? Our preliminary estimates for 1983 suggest that procurement may have experienced some modest growth over 1982. This conclusion is tentative because of the difficulty we have in estimating the distribution through time of the costs of systems that are built over several years. The phasing problem is a particular problem for recent years like 1983 because it involves judgments about new systems that we think will deployed in the future but for which the lead costs must be phased back to the present. If the system enters at reduced levels, or is stretched out longer than expected, then our current estimates for 1983 will be revised downwards.

What interpretation should then be placed on the higher apparent growth

of procurement in 1983? One possibility is that this figure will be revised downwards as we collect more information about he pace of weapons production in 1984 and 1985. This has happened before when we did an annual update. Another interpretation is that this growth lies within the range of the year-to-year fluctuations of the previous six years and does not signify a new trend. A third possibility is that this estimate is sufficiently above the average of the last six years to be an early indicator of a return to more rapid growth. Another year of data is required before we can choose among these interpretations.

Investment

While defense has been maintaining its place as a claimant on Soviet production, new fixed capital investment--annual outlays for plant and equipment--has absorbed a rising share of GNP in the 1981-85 Plan period. Investment increased at an average annual rate of more than 4 percent during 1981-83, and the economic plan calls for an increase of 3.9 percent this year. Since investment has been running well ahead of plan each year, the actual increase in investment in 1984 could be even greater. Assuming that the 1984 target is reached or exceeded and that new fixed investment grows by 4 percent in 1985--about the 1981-84 average--investment in the first half of the decade would rise by roughly 20 percent compared with 1976-80, almost double the planned growth of 10.4 percent.

The 1981-85 Plan had called for slower growth in investment than in overall economic growth. The slowdown in investment growth planned--the lowest in Soviet post-war history--was predicated on the assumption that offsetting increases in capital (and labor) productivity would stimulate growth in GNP and in individual sectors of the economy.

-- Plans for building new facilities were pruned, and construction activity was refocused on renovating existing structures.

-- Existing machinery was to be replaced more rapidly by new, technologically advanced equipment as the primary means of introducing new technology into the economy.

At the same time, inventories of unfinished construction were to be markedly reduced in order to maintain the annual flow of new production capacity brought on line. Indeed, the commissioning of new capacity was targeted to rise by an average of almost 4 percent a year.

As we noted in our testimony last year, this investment policy apparently was abandoned by the leadership from the very outset of the 11th Five-Year Plan. Investment has been accelerated in order to provide more balance between renovation and reconstruction of existing facilities--the cornerstone of the original plan--and expansion of existing facilities and the building of new ones. During 1981-83, for example, state expenditures on the reconstruction of the "productive" capital stock grew by about 6-1/2 percent a year while state spending on construction of new "productive" facilities increased by approximately 4-1/2 percent a year.

As far as the allocation of investment thus far in the 11th FYP is concerned, investment in industry has increased by slightly more than 4 percent a year on average. The fuel and power branches have absorbed the largest share--more than one-third of industrial investment during 1981-83. Investment in the oil industry has grown particularly rapidly--by more than 10 percent per year.

Investment in the machinebuilding sector has risen by less than 4 percent a year. This is a vitally important sector of Soviet industry; it produces defense hardware for the military, durable goods for the consumer, and machinery for investment. Because the modernization of the machinery sector has lagged, it is not producing the quantity, and more importantly the quality, of equipment required to refurbish Soviet industrial facilities. Indeed, some Soviet experts argue that the rise in capital-output ratios in the USSR will not be arrested until the technological level of Soviet machinery is raised substantially and on a continuing basis.

Meanwhile, the share of investment going directly to agriculture has remained about 27 percent. Investment in the railroads has been flat since 1981 even though rail freight transport has been a major bottleneck in the economy.

USSR: Average Annual Percentage Growth in New Fixed Investment

	Actual 1981-83	1981-85 Plan
Total investment	4.4	1.6
Industry	4.1	4.2[a]
Fuels and power	6.5	8.7[a]
Ferrous metals	5.6	5.4[a]
MBMW	3.8	3.4[a]
Agriculture	2.5	1.4[a]
Transportation and communications	5.5	NA
Construction	3.0	NA

[a] Estimated.

Consumption

Consumption has grown at a rate only slightly less than that of GNP

during the current five-year plan period--except for 1982, when it grew much more slowly than GNP. This year official Soviet data imply an increase in consumption (about 4 percent) in excess of GNP growth.

General Secretary Chernenko, like Andropov before him, has shown concern for the welfare of the population in investment allocations, program proposals, and import decisions. In public statements, however, both leaders were careful not to raise consumer expectations too much. They played down the material aspects of consumption while still stressing the link between increases in income and labor productivity.

The regime is trying to reduce the imbalances between demand and supply of individual consumer goods that have made persistent shortages and rationing--formal and informal--a way of life in the USSR. The growth of personal incomes has been restrained to bring wages more in line with the availability of consumer goods. Average wages increased about 2.5 percent a year during 1981-83 compared with 3 percent during 1976-80 and 3.6 percent in 1971-75.

The regime also is taking steps to increase supplies of food and nonfood consumer goods, housing, and consumer services. To increase the availability of quality foods Moscow is (1) banking on a quick payoff from the Food Program to increase domestic production of agricultural products and (2) continuing to import large quantities of agricultural products. More than $9 billion of hard currency--about one-third of Moscow's total hard currency receipts--were spent in 1983 on agricultural imports. The Kremlin also is trying to spur domestic production of consumer goods, although improvement in this area has been slow or even negligible, and is continuing to import large quantities of nonfood consumer goods. About $11 billion worth of such goods were purchased abroad last year--almost 60 percent from Eastern Europe. In internal prices

these accounted for a substantial share of retail sales of nonfood consumer goods--about 10-15 percent. As a result of these policies, retail trade turnover, which had been stagnant in 1982, increased in real terms by about 3 percent in 1983. Based on statistics for the first six months of 1984, growth in retail turnover may be even faster this year.

The Soviets also have stepped up construction of new housing. The 112.4 million square meters of housing constructed in 1983 represents the largest yearly increase in housing construction in more than two decades. In addition, a flurry of party-government resolutions in recent years have called for improvements in the consumer services area--expansion of repair and cleaning shops, more personal services, and the establishment of more convenient shopping hours in the service sector.

Still, consumption levels in the USSR have risen only slowly in the 1980s. Per capita consumption, for instance, dropped in 1982 and increased by only about 1-1/2 percent in 1983. Certainly the regime has a considerable distance to go in eliminating the disequilibria plaguing consumer markets and in providing more adequate incentives for workers. This will not be accomplished, we think, until the leadership is willing to restructure retail prices and bring the mix of products produced into greater conformity with demand and is able to provide the population with more substantial and continuing increases in the supply of quality food, housing, and personal services.

USSR: Annual Growth of Per Capita Consumption

(percent in established prices)

	1971-75	1976-80	1981	1982	1983
Total consumption per capita	2.9	2.1	1.9	-0.6	1.4
Consumer goods	2.8	2.0	2.0	-1.2	1.2
Food	1.6	0.8	0.7	-0.6	1.8
Soft goods	3.0	3.1	2.4	-1.5	0.7
Durables	10.0	5.4	6.4	-2.7	-0.3
Consumer services	3.0	[illegible]	1.7	1.5	2.2

Reasons for the Improved Economic Performance

Ordinarily, we might have expected Soviet leaders to be enthusiastic about the results of the last two years, but their reaction has been restrained. This unusual reticence reinforces our caution in assessing the recovery. The lack of euphoria on the part of the Soviets can perhaps be better understood by looking at the trends in the level of output since 1975 rather than growth rates.

From 1976 to 1978, Soviet industry recorded unprecedentedly low rates of growth. At the time we believed this development reflected serious economic difficulties even though a continuation of those basic trends would still have output in 1984 some 40 percent above the 1975 level. From 1979 to 1982, industrial growth slowed even more, opening a gap between actual achievements and the then historically slow 1976-78 trend. The 1983-84 recovery put industry back on its 1976-78 growth path, but left it substantially below the level that could have been reached if the Soviet growth recession had not occurred. Still, the question remains, why has measured economic growth turned up after several years of mediocre performance? We have considered a number of possible explanations.

The Recovery As A Statistical Anomaly?

Our estimates of Soviet economic performance in 1983 and 1984 are preliminary. The statistics for 1983 are subject to change and the size of the sample for 1984 will increase considerably next year when we have access to a larger volume of information. Often the early sample exaggerates the growth rate because it relies on press reports that tend to emphasize the positive features of economic performance. As more data become available, we expand our sample and revise our estimates accordingly. A good example of this happened recently. We had been carrying an estimate for the growth of production of processed foods for 1983 as 5 percent, but a reassessment this fall lowered that figure to 3 percent. While we do not expect large changes in every part of the economy, further revisions may reduce the measured extent of the recovery.

Restoration of Balance

In the late 1970s, a lack of balance in Soviet industrial development became increasingly apparent. Shortages of industrial materials and energy pushed down capacity utilization rates. Then, the economy suffered two severe shocks from extremely harsh winters in 1978-1979 and 1981-1982. Plants were idled while waiting for raw materials to be produced and shipped. The cold weather increased the demand for fuels and electric power. In factories, choices had to be made whether to slash output and keep energy use constant or maintain output and accept disproportionate increases in energy use. In some locations, electric power stations were forced to reduce the amount of power they supplied.

Unusually extreme winter weather also snarled the transportation network, further complicating the shipping of products to their ultimate destination. These effects spilled over into other sectors, as their supplies of raw and

intermediate materials dwindled, and hampered production of several commodities, some of which suffered unprecedented declines in the level of output. In turn these large shortfalls created other imbalances which further disrupted the economy.

The regime began to focus on these bottlenecks early in the 1981-85 Plan. In 1983 and 1984, the process gained momentum. Transportation benefited from fewer weather-related interruptions and decreased demand for freight cars to support activities related to the invasion of Afghanistan and efforts to deal with the crisis in Poland. Shortages of ferrous and nonferrous metals also eased. With more reliable transportation, better performance in the raw materials sector, and more dependable supplies of electric power, production of steel, chemicals, and construction materials was able to rebound. Just as the effects of bottlenecks had spread throughout the economy during the poor years, so breaking them produced the opposite effect.

Productivity Growth

The economic acceleration in the past two years has not been the result of faster growth in the supply of labor or fixed capital. Rather, it has reflected improvements in productivity. The combined productivity of labor and capital in nonagricultural sectors, which had declined by 1.3 percent a year in 1979-82, levelled out at -0.4 percent in 1983 and may be increasing in 1984.

The breaking of bottlenecks and improved supplies of raw materials helped on the productivity front by permitting a more complete utilization of the capital stock and labor force. Other factors have been at play, however. For example, Andropov's discipline campaign (discussed below) probably had an appreciable effect. If, for example, the campaign managed to reduce average

absenteeism by only one-half hour per week, labor productivity (as measured by output per worker) would have been raised by one percent, provided that the necessary raw and intermediate materials were available. Improvements in the supply of consumer goods may also have boosted worker morale and productivity by reducing the time spent off-the-job in queues to purchase consumer goods or by simply increasing incentives.

Policy Decisions

Whatever the reason for the continued restraint on military procurement, it did give the economy some breathing space. A continuation of procurement growth at its historical rate after 1976 would have raised the level of procurement by 25 percent and the defense burden by at least one percentage point. The resources used for investment are the ones that are most substitutable for procurement. If the resources were diverted entirely from investment, the rate of investment growth would have fallen by as much as two percentage points a year. The stagnation in procurement permitted the leadership to raise investment above the levels originally planned for 1981-85.

Continued growth in military procurement would not only have hampered investment; it would have increased demand for the products of those industries that were finding it hard to expand output. The effects of an increase in procurement spread across the economy as inputs--both direct and indirect--must be provided to accommodate it. In particular, metallurgy, machinery, electric power, and fuels would have to devote a larger share of their output to supporting defense. (We should note, however, that increased investment, especially in machinery production, will pay dividends in terms of long range military procurement.)

Outlook

In sum, we think that economic pressures have eased somewhat in the USSR during the past two years. To recapitulate, the better economic performance was due to:

-- Better weather, which helped boost farm output and industrial production and ease snarls in rail transport;
-- Relief from the shortages of raw materials that had been severely constraining industrial production;
-- Increases in hours actually worked per day and greater utilization of production capacity; and
-- Greater efficiency resulting from more effective management and, perhaps, an improvement in worker morale.

The Near Term

Can the Soviet economy's better showing be sustained in the years ahead? In our judgment, the recent upswing in GNP growth could continue for another year or two. This would require continued improvement in some of the same factors that have been responsible for the better performance in the last two years, especially increases in actual hours worked and further relief from bottlenecks.

Whether the labor discipline campaign has run its course is a major uncertainty in near-term projections. Because of the prevalence of long lines at markets and the difficulties encountered in obtaining many goods, Soviet workers frequently spend part of the working day away from the job shopping.

Drunkenness at work also is a serious problem. The campaign introduced by Yuri Andropov in late 1982 was intended to prevent such violation of work rules, to enforce tighter discipline in management, and to punish corruption. One of Andropov's first acts, in fact, after taking office was to fire some allegedly corrupt or incompetent officials. The Minister of the Railways, for instance, was summarily dismissed within weeks of Brezhnev's death.

General Secretary Chernenko has followed Andropov's lead in stressing the need to maintain labor discipline. In a recent speech he underlined the importance of increasing discipline, ending "parasitism," and eliminating alcoholism. He pointed out that increased discipline had produced an "immediate and noticeable" improvement in production and in conserving resources. Chernenko also appears to be continuing the crackdown on corruption.

We are skeptical that the campaign actually has made people work significantly harder, although it apparently has succeeded in forcing people to spend more time on the job. Nonetheless, even if Chernenko matches Andropov's zeal for discipline and cracking down on corruption, the discipline campaign offers only temporary assistance in raising productivity in the economy. Without more stringent application, the impact of the discipline campaign will weaken. There are, in fact, indications that the campaign has begun to wind down; the crackdown on people who, contrary to law, offer merchandise for private sale has abated as has the police campaign to check on people absent from work.

Further progress in eliminating bottlenecks in the economy won't come easy either. The railroads, for instance, continue to operate at near-maximum capacity, and serious difficulties in transportation could resurface at any

time.

On balance, the factors reviewed above suggest that GNP growth the next year or two will remain in the 2-3 percent range. This estimate reflects primarily a judgment that industry and other key sectors outside of agriculture will continue their improved performance of the last two years. Because year-to-year movements in GNP depend heavily on agricultural output, which in turn depends so heavily on the weather, growth in a particular year could well fall outside this range if the weather is unusually good or bad.

Longer Run

The stronger showing in 1983 and 1984, even if it continues another year or two, would not in our view foreshadow a higher growth rate over the longer term unless Moscow begins to take effective steps to attack the inherent inefficiencies of the Soviet economic system. The primary sources of improved growth in recent years will not overcome the more fundamental problems that have pulled economic growth down in the Soviet Union since the mid-1970s.

Slower Growth in Labor and Capital. Additions to the working-age population have been falling since the mid-1970s because of the lower birth rates of the 1960s, an increase in the number of workers reaching retirement age, and a rising mortality rate among males in the 25 to 44 age range. These increments will be lower in the next several years than at any time in the last several decades. In fact, they will be less than one-third of the annual additions to the work force in the first half of the 1970s.

Growth of the Soviet capital stock has also slowed, although less than we previously expected because of the faster-than-planned growth in investment and some success in holding down the growth of unfinished construction. The value of the stock of fixed capital in the Soviet economy increased by slightly more than 6 percent per year during 1981-83, compared with 8 percent

in the first half of the 1970s and 7 percent in 1976-80. A more pressing problem has been an inability to employ capital assets more effectively and a failure to embody more modern technology in new capacity being brought on line. A large part of the Soviet capital stock is old and obsolete. One Soviet author estimates, for instance, that 30 to 40 percent of all equipment now in operation in the USSR has been in use for 15-20 years or more.

Rising Costs of Industrial and Agricultural Raw Materials. Even though the Soviet Union is endowed with enormous quantities and a wide variety of raw materials, these materials in many instances have become increasingly inaccessible and the cost of exploiting them has risen sharply:

-- The economy has become more dependent on Siberia for fuels and other raw materials. Developing these new areas requires large capital investments, particularly in construction.
-- Most of the new areas require social overhead capital--roads, housing, cultural, and service facilities--in addition to the basic facilities for exploration and exploitation.
-- The declining quality of readily available raw materials has pushed up capital requirements because of the cost of enriching poor-grade minerals and ores.

If oil and coal production does not begin to increase again, energy supplies will remain taut and spot shortages of the sort experienced in recent years will continue.

Agriculture and its supporting industries currently preempt about one-third of total Soviet investment and one-fourth of hard currency earnings and require growing subsidies to maintain stable food prices. A number of factors will continue to sap productivity in the farm sector in the years ahead.

-- Until the leadership eliminates output quotas, revises the success indicator system, and stops interfering in day-to-day operations, farm production will be plagued by high costs and low productivity.
-- The relatively slow pace of industrial growth in the second half of the decade will limit the support industry can give to agriculture unless the planners give the Food Program very high and continuing priority.
-- The renewed commitment to land relamation at the October Plenum on agriculture suggests that a considerable part of farm investment will have long-delayed and uncertain returns if past experience with these programs is a reliable guide.
-- Technical progress in farm production will occur slowly because of inadequate incentives and poor support from industry.
-- Shortages of younger, skilled workers will persist in many regions until there are major improvements in rural living conditions and an upturn in annual increments to the general labor force.

Systemic Problems. Economic growth will also be held back by the USSR's highly centralized system of planning and management. As the Soviet economy has grown in size and complexity, it has become more and more difficult to manage from the center. Moreover, a perverse system of incentives promotes inefficient behavior by enterprise managers and dampens the introduction of new technology into the economy.

The inflexible Soviet system contributes to the USSR's technological backwardness. The gap between the USSR and developed western countries continues to grow in technologies not directly confined to weapon systems. The Soviets have been particularly unsuccessful in stimulating advance in the technologies that underlie the hopes for western productivity growth--microelectronics, computers, robotics, and advanced materials. They concentrate on copying western developments, and only a massive program for acquiring western technology has prevented them from falling further behind.

Indeed, the greatest potential for economic gain in the USSR over the longer term probably lies in economic reform. However, true reform--that is a major restructuring of the Soviet economy to include greater use of markets--is not likely. The political elite strongly oppose full-scale marketization because they fear it would lessen party authority and control. Most policy advisers in the Soviet Union do not believe it would be the right solution even if it were politically feasible. Soviet leaders view centralized planning as mandated by "Marxism-Leninism" and as being responsible for elevating the USSR to world superpower status.

Certainly nothing in Chernenko's background or past pronouncements indicates an inclination toward bold systemic change that would significantly reduce centralized planning and management. After almost a year in office the General Secretary has not put forward a clear-cut economic strategy let alone

any new initiatives in the area of economic reform. He has largely carried over the programs of the previous administration which focus on seeking modest improvements in the system of incentives and performance indicators.

The most important of the "new" programs carried over from the Andropov regime is the "economic experiment" introduced in January 1984 in two All-Union and three republic-level industrial ministries. The experiment gives enterprises managers more latitude in using investment and wage funds, reduces the number of success indicators (making contract fulfillment the key indicator), increases the role of production associations and enterprises in drafting plans, and ties worker benefits and managerial bonuses more closely to enterprise performance. Soviet planning officials have characterized the experiment as a "strategic study" or "proving ground" for measures to be introduced throughout the economy as a whole. Those innovations that "justify" themselves during a two-year experimental period--1984-85--will be adopted on a national scale for the 12th Five-Year Plan (1986-90).

The Soviet leadership has already expressed satisfaction with preliminary results of the experiment and has announced plans to expand it to include enterprises in six new All-Union and twenty new republic level ministries. (Participating industries will then account for 15 percent of industrial production.) According to Soviet officials, there has been a substantial increase in fulfillment of contracted sales obligations, an improvement in product quality and productivity, a reduction of production costs, and a more rapid introduction of technological innovation in those enterprises participating in the experiment.

Nonetheless, a steady undercurrent of skepticism and criticism of the experiment appears to be building among Soviet economists, government officials, and factory managers. One Soviet economist, for instance, has

questioned the effectiveness of the new measures in ensuring contract deliveries and has suggested that there will be even larger problems in extending the experiment to the entire economy. The noted Soviet economist, A.N. Aganbegyan, director of the Novosibirsk Institute of Economics of the USSR Academy of Sciences, said recently that incentives provided under the experiment have had little, if any, effect on the productivity of the average worker.

More generally, economists at the Novosibirsk Institute have termed the achievements of the experiment during the first seven months "modest". Enterprise managers have complained that despite the stipulations that they be given a larger role in the planning process and that plans remain stable over a 5-year period, their submissions have been largely ignored and plans are still frequently changed. Our own assessment is that the experiment is too limited to have much potential for improving industrial performance and that the success reported so far is largely the result of the priority given to the participants in receiving supplies of labor and materials.

Foreign Trade as a Spur to Economic Growth

The Soviet economy would certainly benefit from continued or increased access to Western goods.

-- Large quantities of farm products will be required to support the livestock program and to keep per capita consumption of quality foods at present levels.
-- Imports of industrial materials such as phosphate materials and other chemicals, ferrous metal ores, and alloying materials would prevent or alleviate bottlenecks that could constrain industrial

production.

-- More and more modern machinery and equipment are badly needed to help modernize industry and to carry out Moscow's investment policy calling for the renovation and reconstruction of existing production facilities.

-- Significant amounts of construction and transportation equipment also may have to be imported.

The Soviet need for imported capital goods will be most pressing and the potential payoff the greatest in the energy sector. During the remainder of the 1980s, the cost and pace of certain phases of Soviet energy development will depend substantially on the level of imports of Western oil and gas equipment and know-how. Soviet interest in imports of Western equipment and technology should increase as exploration and development shifts to deeper and more complex onshore deposits, especially as exploitation of the deep sulfurous petroleum deposits in the Pre-Caspian Depression and Central Asia proceeds. Exploration and development of Arctic offshore deposits in the Barents and Kara Seas would also be helped by Western equipment and technology. The pace of Arctic offshore development will also depend on the degree to which the Soviets are willing to permit major Western firms to man and manage operations and, possibly, on the availability of Western financing of project costs measured in tens of billions of dollars.

Still, we do not believe that the Kremlin can rely much on increased imports to avoid resource pressures in the domestic economy during this decade. Our projections indicate that--barring another round of spiraling oil

prices--Soviet hard currency purchasing power will not rise significantly through 1990. Consequently the USSR will have difficulty financing more than modest growth in hard currency imports unless it is willing to accept a sharp increase in its debt. Western credits are one--and a relatively immediate--means of financing additional hard currency imports. But Soviet debt management policy would first have to become less conservative, and Western governments would have to provide significantly greater encouragement and guarantees to Western banks. If Moscow were willing to rely more on Western loans to buy equipment and technology--as it did in the early and mid-1970s--the benefits would be sizable. For example, if Moscow had adopted a less restrictive borrowing policy during 1981-83--perhaps allowing a doubling of equipment imports from the West--the machinery component of new fixed investment would have increased by about 10 percent annually compared with the 5-percent annual growth actually attained.

The Soviets, however, appear reluctant to step up overall imports from the West on political grounds. The recent credit and trade embargoes have persuaded Moscow that becoming too dependent on the West is dangerous. Imported Western plant and equipment, moreover, has fallen short of its potential for improving the USSR's overall economic performance because of problems in assimilating and diffusing Western technology.

Moscow could attempt to squeeze more out of Eastern Europe by pressuring Warsaw Pact allies to reduce their deficits on bilateral trade with the USSR in the second half of the 1980s and to boost their exports--especially those of higher quality goods--to the Soviet Union. In fact, the Soviets now appear more willing to lean on Eastern Europe than they have in the past.

-- The Soviets are envious, even resentful, of the higher standard of living in most East European countries than in the USSR.

-- Moscow is probably confident that social order can be maintained. Martial law has effectively controlled tensions in Poland, and there has been little overt discontent in any of the East European countries despite harder economic times.

-- The regime probably believes that the East European nations could compensate for increased Soviet demands by cutting down waste and inefficiency in their economies.

We don't believe, however, that the Kremlin will have much success in reducing net exports to Eastern Europe. Most East European countries are struggling to sustain some positive economic growth of their own while putting their hard currency balances in order. Moreover, the technological level of most East European finished goods is still below that of the West.

Overall Long Term Assessment

All things considered, we believe Soviet economic growth will average 1.5-2.5 percent per year in the second half of the 1980s. If the low end of the range is to be avoided, capital investment will have to continue to increase at above-plan rates (as seems likely), weather conditions for agriculture will have to approximate the 1960-83 average, and Moscow must succeed in implementing plans for fuel conservation and fuel substitution. Energy shortages are not likely to be a major hindrance to growth of GNP this decade unless the oil sector goes rapidly downhill--a point that was

emphasized in last year's testimony. In fact, the Soviets appear to have had some success in slowing the rate of growth of energy consumption relative to GNP.

To reach or exceed the high end of the GNP growth range the USSR would have to achieve productivity gains like those recorded in the late 1960s and early 1970s. Until 1983, combined productivity of inputs of labor, capital, and land had been falling for over a decade--as the tabulation below shows. Our judgment is that the USSR will not be able to reverse this trend over the next several years. Soviet policymakers have not adopted the changes in investment policy or in economic management that might arrest the long-established decline in fa t r productivity.

USSR: Growth of Factor Productivity
(average annual percentage change)

	1966-70	1971-75	1976-80	1981-82	1983
GNP	5.3	3.7	2.6	2.1	3.2
Inputs of labor and capital	4.1	4.2	3.5	3.1	3.0
Factor productivity	1.1	-0.5	-0.8	-1.0	0.1

Policy Implications

Domestic Policy

Moscow's room for maneuver in resource allocation among military and civilian claimants in the second half of 1980s will be severely limited. The Soviets have released little information about their plans and policies for 1986-90. We do know, however, that the Soviet leaders have already adopted two expensive programs as part of the 12th FYP--the Food Program and a long-

term Energy Program. The cost of the Food Program could run as high as 265 billion rubles--suggesting that agriculture's priority will not be decreased. Indeed, at a recent special Party Plenum devoted to agriculture, Chernenko announced increased output and investment goals for land reclamation, calling success of the Food Program critical to the leadership's effort to raise consumer welfare and productivity. Investment in energy also is likely to be an enormous drain. At a minimum, we expect investment in the energy complex to total 170 billion rubles, an increase of 28 percent over planned investment in 1981-85. Although the Soviets have announced no official target for total investment during the 12th FYP, anything less than the current 4 percent annual growth--assuming they go ahead with the Food and Energy Programs--would put a severe crimp in the amount of investment resources available for other areas essential for future economic growth, such as machinebuilding and transportation.

In our judgment, the leadership will probably attempt a precariously balanced policy of at least some growth in living standards and increasing allocations for new plant and equipment combined with some growth of military procurement. Certainly the pressure to step up defense procurement must be intense given the state of Soviet-American relations and the recent increases in US spending on military hardware. But a decision on increasing the rate of growth of defense spending has to be a tough one, not so much because of the impact it would have on overall economic growth but because of the implications for Soviet society. Our analysis indicates, for instance, that at current rates of investment, and even with defense growing at our present estimate of 2 percent a year, per capita consumption would grow by only 1-1.5 percent annually during 1986-90. Accelerating defense spending to a rate of 5 percent a year--a rate approximating the 4 to 5 percent growth observed

during 1966-76--would jeopardize Soviet prospects for anything but minimal improvements in consumption levels.

Sluggish improvement in living standards over a prolonged period would not sit well with the Soviet population. At a minimum it could erode recent gains in productivity. It could even provoke a crisis between the regime and Soviet society if it continued over a long period.

It is important to note, however, that even if defense spending growth is not increased during 1986-90 and overall economic growth is in the 2-2.5 percent range, the Soviets could continue to deploy major weapon programs and modernize their forces. Important programs in development that could still be deployed through the early 1990s include several military space systems, strategic cruise missiles, another generation of strategic ballistic missiles, a strategic bomber, a large transport aircraft, and a large carrier for conventional aircraft.

Foreign Policy

Continued slow economic growth in the range indicated is unlikely to result in major changes in Soviet foreign policy. We do not see economic problems at home motivating the leadership to undertake high-risk adventures abroad that are designed to distract an unhappy public or produce economically beneficial geo-strategic breakthroughs. Nor, on the other hand, would a continuing economic slowdown be likely to significantly constrain Soviet political and military activity in the Third World.

Eastern Europe. An economic slowdown would have its most serious external impact on relations between the USSR and its client regimes in Eastern Europe, which currently receive most of Soviet economic and military aid. To achieve the levels of GNP growth and per capita consumption we have projected by 1990, for instance, Moscow may have to impose cuts in oil

deliveries to Eastern Europe beyond those already levied. Reductions in raw materials deliveries from the USSR are also possible. Measures such as these could cause new political and economic strains to develop between Moscow and its East European allies.

Relations with the Third World. A continuation of the slowdown in economic growth would be a factor affecting Soviet policy toward the Third World, although it would be of less importance than military and geopolitical considerations. In general, Moscow is likely to become more tightfisted in giving economic assistance. However, exceptions are likely to continue to be made to this policy. In the case of Cuba, Vietnam, and Afghanistan political and military-strategic factors outweigh economic considerations, even though the USSR incurs most of it's Third World economic burden in its relations with these countries.

Bilateral US-USSR Relations. Although we don't believe that Moscow can rely much on increased imports to avoid resource pressures on the domestic economy, economic difficulties will give the Soviets a continuing incentive to obtain US grain and state-of-the-art technology in such key areas as energy, agricultural technology, and machine tools. The robust outlook for global grain production over the next few years suggests that in years of average harvests the Soviets will have only a limited need for purchases from the United States above the Long-Term Grain Agreement minimum commitment of 8 to 9 million tons. Therefore, US grain-based political leverage is likely to be quite limited. Nonetheless, Moscow will still find the United States attractive as a supplier because of its unique year-around capacity to deliver large volumes of grain quickly--especially corn--at short notice.

As noted above, large-scale US assistance probably would be helpful to Moscow in maintaining oil output and developing Arctic offshore resources.

Whether this degree of technological dependence on a narrow range of US equipment--particularly high-capacity submersible pumps and offshore equipment--translates into much political leverage for the United States is doubtful. Soviet willingness to accommodate US political interests in return for assistance in oil production would be questionable in any event and would depend greatly upon Moscow's assessment of the overall state of US-USSR relations.

Figure 1
USSR: Growth of GNP and Non-Agricultural GNP

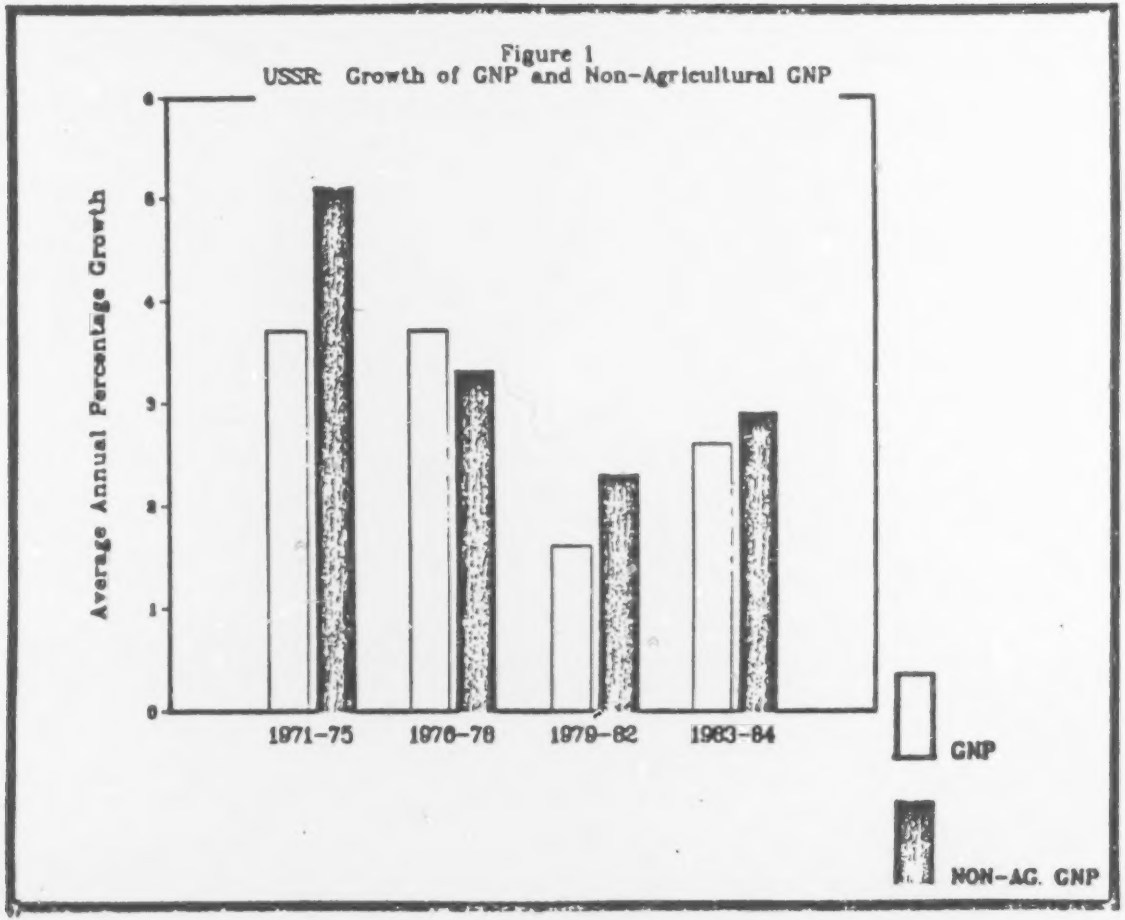


Figure 2
USSR: Growth of Industrial Output

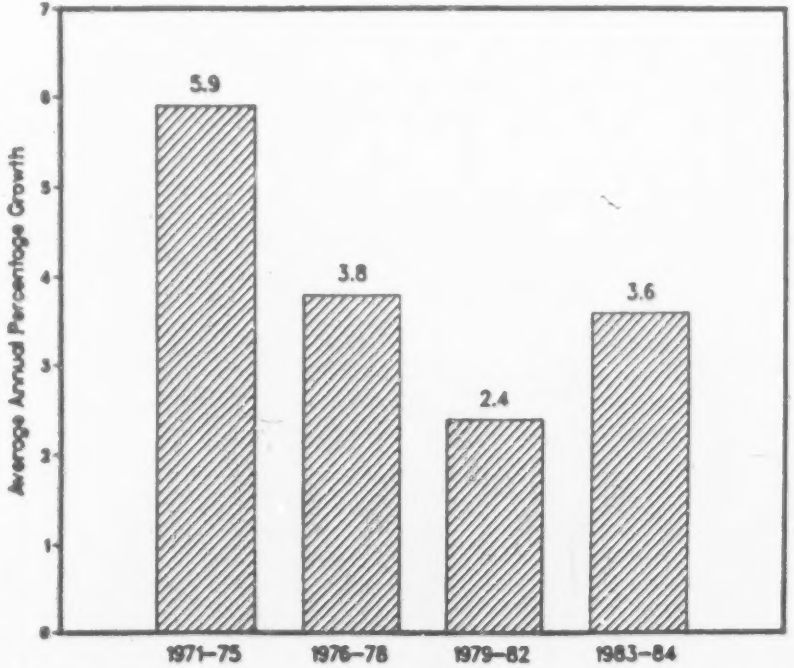


Figure 3
USSR: Growth of Output of Key Industrial Materials

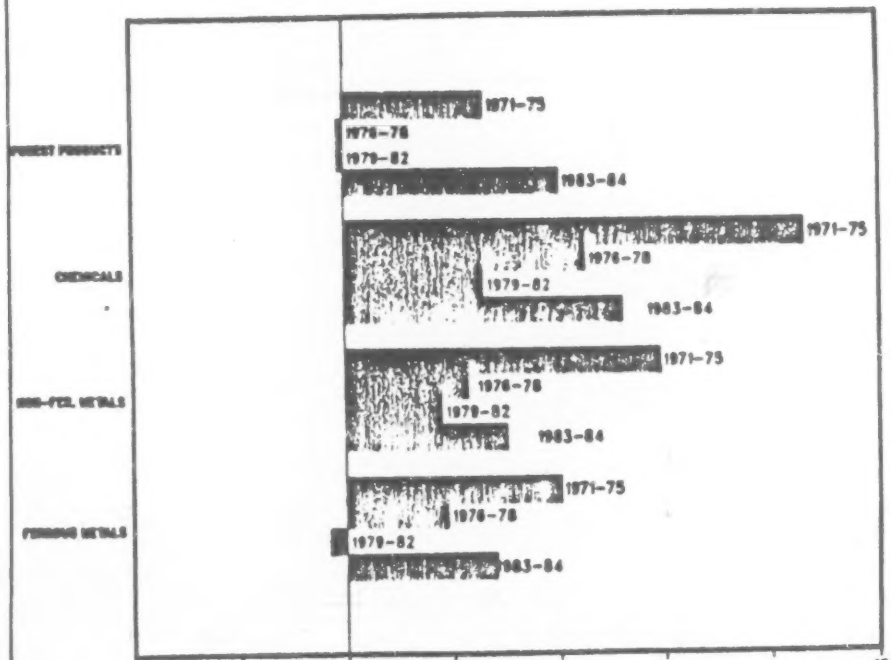
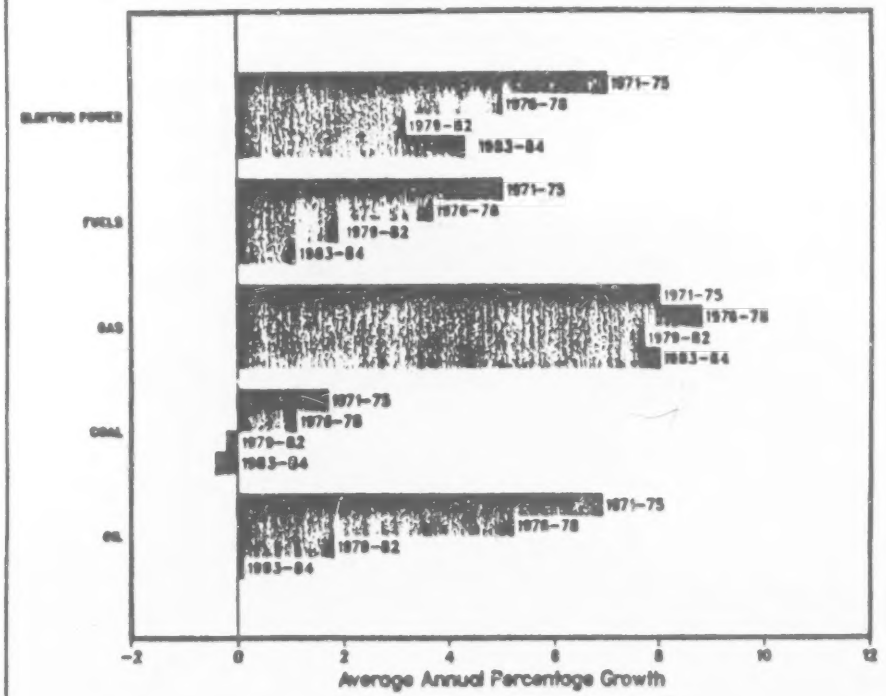


Figure 4
USSR: Growth of Output of Fuels and Electric Power



China: The Impact of Reform on the Economy in 1983 and Prospects for the Future

Introduction

China's economic performance in 1983 and early 1984 reflects the successes and failures of experiments with reform that have been underway since late 1978. Grain and cotton output reached new highs as agricultural reforms gave peasants a freer hand in farming. Growth in the industrial sector was strong, but Beijing had major problems improving efficiency. At the Party Plenum last month the reform wing of the party under Deng Xiaoping approved a comprehensive document on reform that builds on the success of agricultural reforms to push for more sweeping changes. If Beijing can successfully overcome the difficulties it will encounter in implementing its urban reforms, we believe significant economic gains are possible in the long run. Such successes would bode well for China's open door policy and could promote a broadening and deepening of China's ties with the United States.

Economic Results in 1983--Mixed Picture

Agricultural Production Up Sharply

Agricultural reforms were the centerpiece of China's effort to restructure its economy, and recent gains have given the regime the peg it needed to justify even more radical departures from orthodox Marxist economic practices.

-- In 1983, the total value of agricultural output jumped 9 percent, more than double the 4-percent goal set in the annual plan.

-- Grain production--the key indicator--hit a record 387 million tons, more than 9 percent above the bumper 1982 crop.

-- Grain imports fell to less than 13 million tons from 15 million tons in 1982.

-- Cotton production showed an even sharper increase of 25 percent as China shed its role as one of the largest cotton importers and began small-scale raw cotton exports. Shipments of US cotton to China were indicative of this trend, falling steadily from a peak level of $700 million in 1980 to only $2 million last year.

China credits its experiment with market-oriented rural reforms for recent agricultural gains, although we believe better-than-average weather and price increases also played an important role. The contract responsibility system, which gives peasants effective control over acreage for periods of 15 years or more, sparked rural enthusiasm. Since the adoption of the responsibility system in late 1978, the Chinese have increased their annual grain production by 83 million tons--more than the entire annual grain production of Australia and Canada combined. A government decision to hike procurement prices for agricultural products also improved rural living standards. With procurement prices now 40 percent higher than in 1978, peasants have been willing to increase their use of fertilizer and other inputs, further boosting agricultural yields.

Beijing is also touting the reforms for their impact on rural employment. In pursuit of profits, an increasing number of unemployed and

underemployed peasants have begun to engage in either commercial activities in the service sectors--opening restaurants, repairing shoes, making clothing, cutting hair, etc.--or production of handicraft items. Beijing hopes by the end of the century to have about 40 percent of its rural labor force employed in non-agricultural production.

The sharp gains have left the peasantry much better off than it was prior to 1978. Rural residents have seen their annual income more than double over the period to about 300 yuan per capita (roughly $150). Moreover, the gap between rural and urban living standards has narrowed significantly. Consumption by city residents rose at an annual rate of 7.2 percent between 1979 and 1983, while rural consumption shot up at a 14.7 percent annual clip. Consumer goods such as televisions, bicycles, watches, and fans are also beginning to work their way into the rural areas.

Energy and Transportation--Mixed Results

The energy sector provided Chinese policymakers with what was perhaps the most pleasant surprise of 1983.

-- Primary energy output rose 6.7 percent, the fastest pace in five years.

-- When energy saving measures are included, the gain comes to more than 9 percent.

-- Much of the production increase can be attributed to improved recovery processes which helped boost oil output by nearly 4 percent to 106 million tons.

-- A new incentive system which allowed producers to market above-quota production at higher prices also had a major impact on coal--China's largest energy source--and probably boosted oil output as well. A newly instituted tax on energy consumption probably contributed to energy conservation efforts.

The transportation sector also achieved good results when measured against the low level of resources that Beijing devoted to it over the past few years. The 7.6 percent increase in goods transported last year came mainly from improved management of existing facilities. Burgeoning budget deficits starting in 1979 forced Beijing to scale-back its budgetary outlays and investment in transportation was especially hard-hit. The share of total investment in capital construction going to transportation and telecommunications dropped from an already low average of 18 percent in the 1971-75 period, to 13 percent in 1976-1980 and to 9 percent in 1981. Last year Beijing raised the proportion back up to 13 percent, but clearly the rate of investment is far short of China's needs.

Foreign Trade--A Growing Surplus

The foreign trade sector has experienced significant growth under China's open door policy. Exports in 1983 rose 2 percent to a record $24 billion and imports showed a 10 percent increase to $18.4 billion. The $5.6 billion trade surplus, China's third consecutive large surplus, has drawn increasing criticism from Western trading partners.

Total foreign currency holdings, (including gold and SDRs), at yearend 1983 amounted to an unprecedented US$20 billion, tenth largest in the world

Figure 5
USSR: Growth of Output of Consumer Nondurables

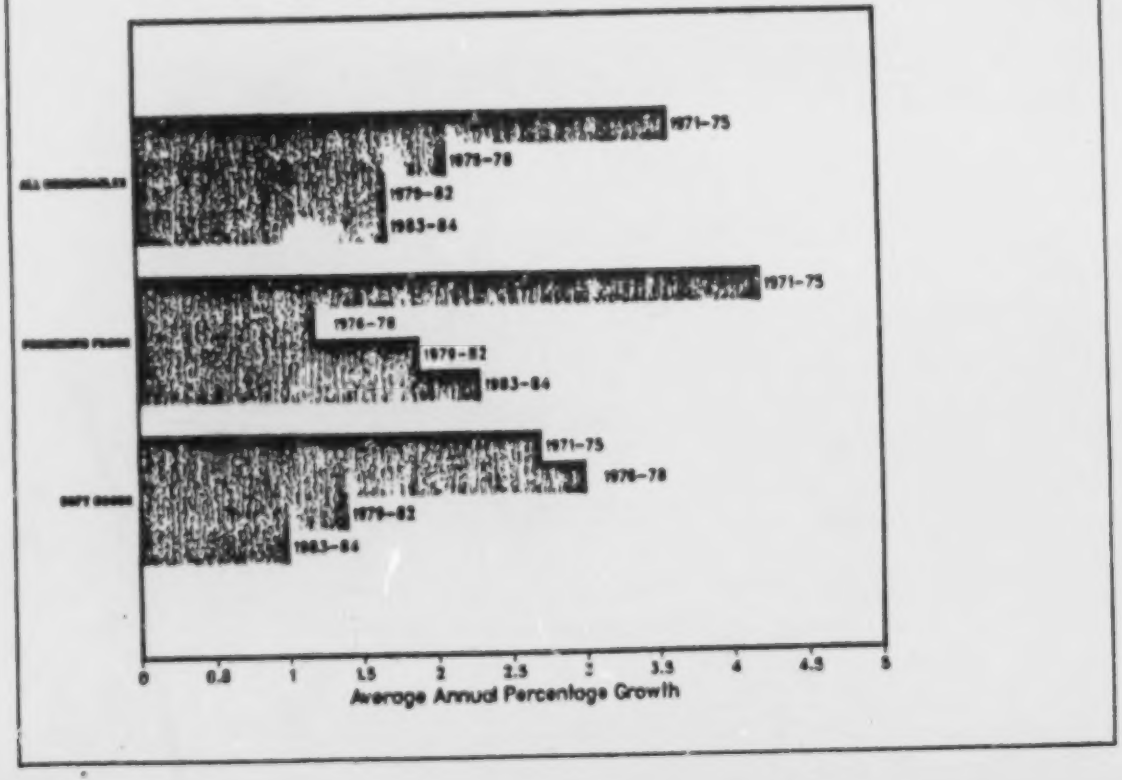


Figure 6
USSR: Growth of Transportation Activity

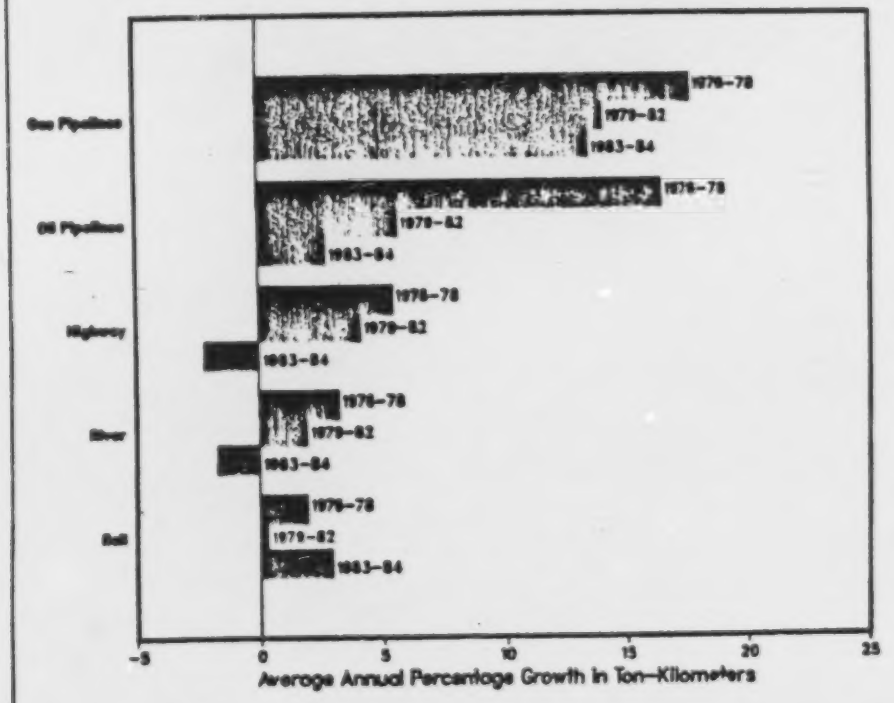
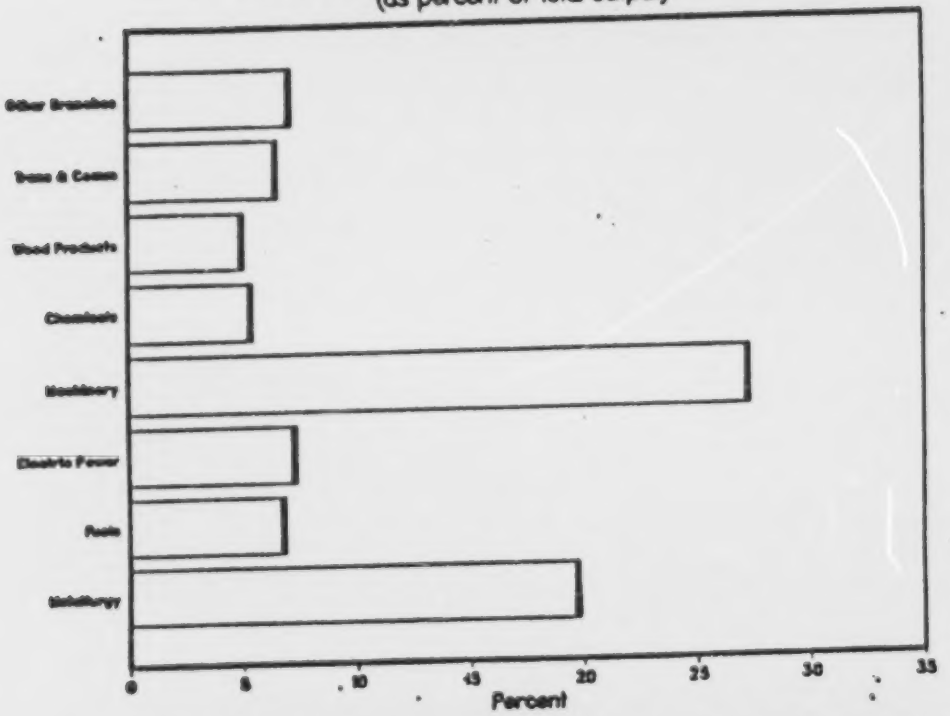
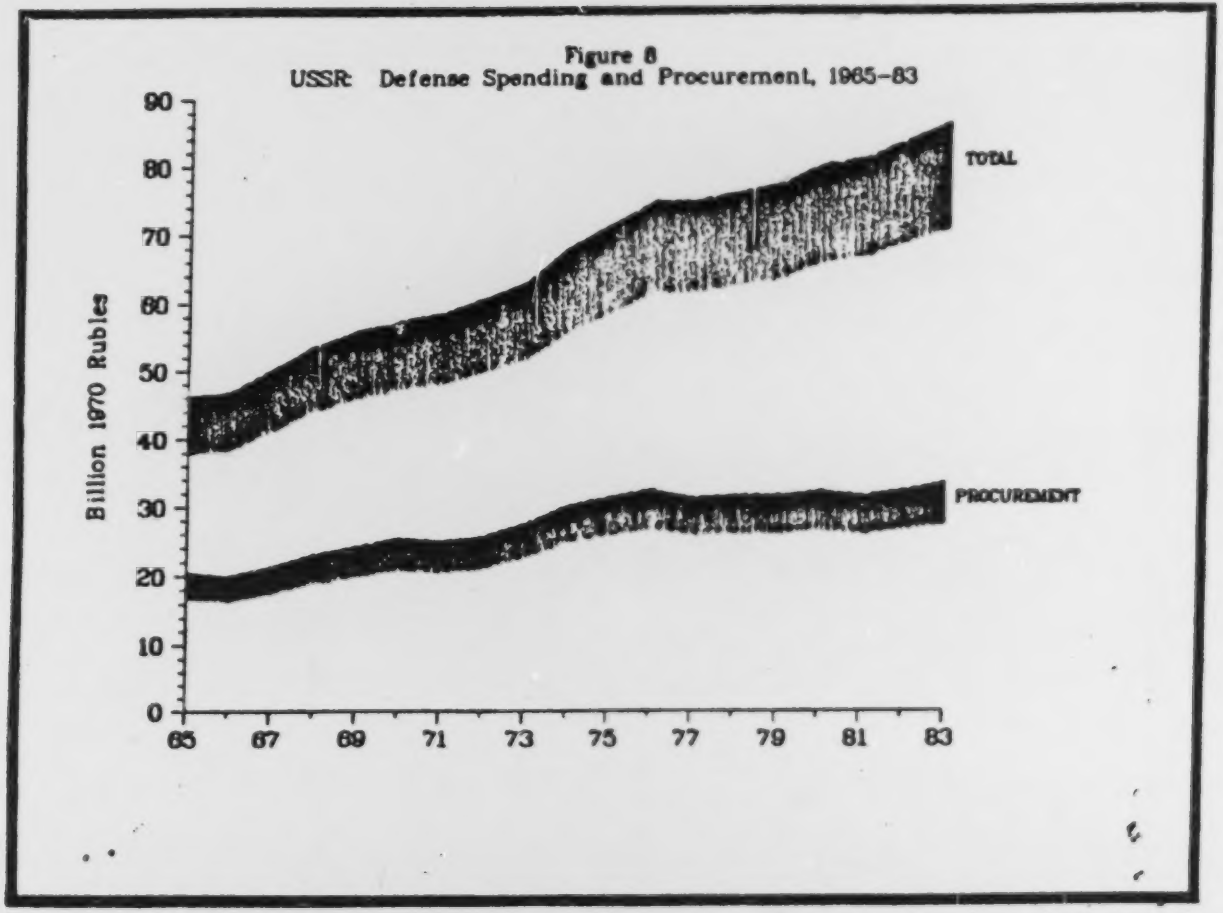


Figure 7
USSR: Key Estimated Direct and Indirect
Deliveries to Military Procurement by Key Industries in 1982*
(as percent of total output)



* Direct deliveries consist of raw and intermediate materials actually used to manufacture procurement goods, such as steel for a tank. Indirect deliveries account for all additional materials that are needed to support military procurement. For example, indirect deliveries would account for the electric power consumed to smelt the steel embodied in the tank as well as the coal to generate that electric power.

Figure 8
USSR: Defense Spending and Procurement, 1965–83



and seventh largest if only foreign exchange is considered. We estimate the debt service ratio at the end of last year was only about 6 percent, one of the world's lowest. Despite an obvious and growing need for Western technology, Beijing has been unusually cautious about accumulating debt or spending its reserves. This reluctance to make major outlays for Western equipment probably stems from several factors, including Beijing's uncertainty about which projects warrant top priority, domestic financial problems, and bureaucratic constraints on the use of foreign exchange.

Military Sector--Aiding Economic Progress

With all the emphasis on economic reform the military has been asked to accept, for the time being, a smaller share of the economic pie. Chinese statistics show the proportion of total budget spending that goes to national defense falling from 17.5 percent in 1979--during China's border clash with Vietnam--to 15.3 percent in 1982. Last year the figure may have fallen below 15 percent. While Chinese budget figures undoubtedly understate total military spending (perhaps by as much as one-half), nevertheless, we believe the percentages give an accurate indication of the trend toward sacrifice the military has so far accepted.

Perhaps in part to attract military support for the cutbacks, Beijing has encouraged military industries to become more involved in civilian production and apparently has allowed them to acquire technology and to retain profits in the process. In 1983, civilian products (bicycles, transportation vechicles, clothing, etc.) accounted for 22 percent of the defense industry's total output, compared to only 6 percent in 1975. If this rate of increase is maintained, by 1990 about one-third of military production will go directly to civilian consumption.

Industrial Performance--A Different Story

China's industrial performance, when measured in terms of total output, also appeared more than satisfactory.

-- The total value of industrial output rose a sharp 10 percent last year, well ahead of the planned 4 percent growth rate.

-- Half of total output originated in the light industrial sector--where China feels its major potential lies--as opposed to only 42 percent in 1978.

Despite the apparent gains, Beijing has grown increasingly dissatisified with the industrial sector's failure to come to grips with major problems of inefficiency and waste. Although small gains have been made in energy conservation, 20 percent of China's industrial capacity is idled by electricity shortages while Chinese enterprises continue to use three-and-a-half times more energy to produce a unit of output than their counterparts in the average LDC. Moreover, much of the output produced at this high cost is shoddy and outdated. For example, only 10 percent of the machinery and equipment currently produced is up to modern standards; the rest, the Chinese claim, is 1950s and 1960s vintage.

The economic reform program was supposed to be an all out attack on these problems, and Beijing openly declared its willingness to sacrifice growth while reforms worked their magic. The Sixth Five Year Plan (1981-1985) called for average annual increases in industrial output of only 2.7 percent, but demanded accompanying decreases in per unit output costs of 1 to 2 percent.

Actual results so far, however, have shown industrial output growing at an 8 percent annual clip and costs inching upward at the same time. The industrial reforms have clearly failed to accomplish their most important tasks.

Mounting Problems Associated With Reform

The failure of the so early piecemeal efforts to improve industrial efficiency provided ammunition to conservative elements within the Chinese leadership who were arguing for a return to tighter central control. Their cause was supported further by a host of new problems that emerged or were made worse by reform policies.

The devolution of decisionmaking authority, for example, threatened to untrack China's high priority infrastructure investment program. Enterprise managers, using their authority to make decisions on capital investment, ignored government pleas to hold the line on industrial investment; between 1979 and 1982 extrabudgetary investment in capital construction more than doubled. The increase not only drained funds needed for infrastructure investment, it also left China short of cement, glass, and other construction supplies needed to support the program. Many of the projects, when operational, also began attracting raw materials needed by larger, more efficient state-run enterprises.

Most serious, in the view of some Chinese leaders, the failure of the initial industrial reforms also threatened to limit China's long term growth potential. Beijing was counting on productivity gains from industrial reform to offset the impact that the falling investment rates would otherwise have on long term growth. But this has not happened. Since 1979, nominal investment in productive assets has risen at only a 4.5 percent annual pace compared to the 6.3 percent real growth of GNP.

Efforts to decentralize decisionmaking authority created financial problems that also threatened to derail the reform program. The fiscally conservative government has had to reconcile itself to 5 consecutive budget deficits totalling about 55 billion yuan. Treasury bonds were used to help finance the red ink without resorting totally to the inflationary printing of money, but the government has grown increasingly concerned about its inability to balance revenues and expenditures.

On the revenue side, budget shortfalls stemmed in part from the decision to cut back on growth in heavy industry--the major revenue generator. When heavy industrial output levelled off in 1980 and then declined in 1981, revenues suffered. And when the government tried to spark productivity by introducing a tax system that would allow enterprises to retain more of their profits, many enterprises began understating profits and overstating costs to avoid tax payment. The China Audit Administration, set up in September 1983 to monitor the situation, found errors and violations amounting to more than 600 million yuan in its first year of operation.

Even successful agricultural reforms compounded financial problems on the expenditure side. Procurement prices for agricultural products were increased sharply beginning in 1979 to boost rural incomes, while consumer prices for those products went relatively unchanged. The result was a huge gap requiring more than 140 billion yuan in price subsidies between 1979 and 1983. Price subsidies alone took nearly one-fourth of total state revenue by 1983 and more than offset the defense and investment cutbacks that were part of the government's budget balancing efforts between 1980 and 1982.

Factors Behind China's Mistakes

Given the magnitude of the changes Beijing introduced, the emergence of serious problems was not surprising. But on several counts, the government's piecemeal approach exacerbated existing difficulties. For example, rather than introducing a comprehensive, well-considered program, the industrial management reforms began as an experiment and then spread almost of their own volition. In 1979 about 4,000 enterprises throughout the country were allowed to experiment with decentralized decisionmaking authority. Less than a year later, 16 percent of all enterprises under the state budget--producing 60 percent of the total value of output and earning 70 percent of the profits--had been given expanded decisionmaking authority. In our view, neither party officials nor central authorities were prepared to surrender authority on such a large-scale on such short notice. Misunderstanding and bureaucratic infighting became major problems.

Lacking a comprehensive plan, Beijing was forced early on to make major alterations in the reform program. The frequent changes led factory managers to question to government's commitment to reform, and hence slowed the implementation process. For example, the government repeatedly altered its tax policy and demonstrated a great deal of uncertainty over how much autonomy local-level enterprises should have in distributing bonuses and in making investment decisions. For factory managers who survived China's Cultural Revolution by resisting any policy changes that deviated from orthodox Marxism, the government's vacillation was a signal to go slow in implementing change.

Beijing's most serious problem in promoting a transition to a more market-oriented economy was its failure to come to grips with its irrational price structure. Aside from the financial problems this generated, the price

structure--large parts of which date from the 1950s--conveyed no meaningful information on which economic decisions could be made. Since prices bore little relationship to production costs, enterprise losses were not necessarily attributable to either inefficiency or lack of demand. Beijing's insistence, therefore, that enterprises make profits had little realistic effect, as the government had no criteria for determining which enterprises should be forced into bankruptcy. By yearend 1983, one-fourth of all state enterprises were operating in the red.

Outdated fixed prices, moreover, meant that firms had no means of assessing their most profitable economic endeavors. Enterprises producing high priced goods requiring cheap inputs, for instance, made large profits regardless of efficiency or product quality. Even when there was no consumer demand for a firm's output, its profits were assured by the state's practice of procuring the commodity at the arbitrarily established price.[1] At the same time, the production of many popular consumer goods began declining or even stopped because such items yield little or no profit.

Nor could China's banking system help in the transition. During the Cultural Revolution the People's Bank of China had operated primarily as a cashier/accountant for the Ministry of Finance. The major function of the bank was to transfer funds at the ministry's bidding. Loans were made to meet plans regardless of the borrower's financial status or the efficiency of the project. Interest charges were held low, when assessed at all, and repayment

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[1]A study of 32 enterprises in Liaoning province revealed that 47 percent of all goods produced in 1983 were unmarketable or already overstocked.

was seldom enforced. The upshot of this policy was intense pressure from enterprises to secure funds for investment, without regard to the possible return.

Finally, the environment in which the seeds of urban reform were sown was much more hostile to change than that of the agricultural sector. Rural reforms gave agricultural decisionmaking authority back to the farmer, but urban reforms handed authority to factory managers who were ill-equipped for their jobs. Most acquired their positions during the Cultural Revolution as a result of their political orthodoxy, not their managerial talents. They lacked both the education and the expertise necessary to function in a competitive environment. Hence, it was not surprising that, for example, when Beijing gave managers the power to reward outstanding work with bonuses, payments were usually made on an egalitarian basis, across the board.

Pushing Ahead With Reform--The 1984 Policy Shift

From 1980 to early 1984, China's economic policies had something of a seesaw character, as economists and economic administrators debated the merits of tight planning versus market regulation, and of reform versus readjustment of the economic structure. At the top of the political structure, it appeared that Politburo elders Chen Yun and Li Xiannian favored a gradual approach to change, relying on more efficient operation of an improved planning apparatus. Opposed to them were Premier Zhao Ziyang and several of China's leading economists, who argued that earlier reform measures had not gone far enough and that there was a need greater reliance on the market, and hence more institutional change.

Earlier this year, the momentum shifted decisively in favor of the reformers, who, with Deng Xiaoping's support, apparently were given the

wherewithal to implement their programs. In January, Beijing issued Central Document No. 1, a comprehensive summary of rural reform measures and a clear call to expand the reforms, giving more opportunities to farmers to engage in commerce and "commodity production." In April, the State Council issued new regulations permitting factories and commercial enterprises to experiment with new wage programs. Less than a month later, the "Provisional Regulations on Greater Freedom for State-Owned Industrial Enterprises" were published, giving enterprises the right to:

-- Produce whatever goods are in short supply after fulfilling State plans for their normal output.

-- Set retail prices for industrial machinery and other means of production within a range of 20 percent around the state price.

-- Decide what share of their income will go to production, expansion, reserves, or bonuses.

-- Lease or rent equipment as long as proceeds go to upgrade existing facilities.

-- Recruit technical specialists directly and develop pay standards.

Although many of these measures were little more than restatements of policies Beijing had experimented with during the previous three years, they signalled a renewed commitment to industrial reform.

Zhao's address to the May session of the National Peole's Congress (NPC) gave official confirmation to the policy shift. After a brief note of praise for agricultural reforms, Zhao devoted nearly two-thirds of his speech to the "urgent" need for "quickening" reform in the cities. Specifically, Zhao called for:

-- Implementation of the second stage of China's tax reform program to give enterprises even greater financial autonomy.

-- Experimental restructuring of the managerial system in the construction industry, replacing financial appropriations with bank loans, using public bidding procedures to issue contracts, and revamping the material distribution system to alleviate shortages.

-- Better utilization of educated technicians in the planning and management process in enterprises.

-- Reform of the commodity circulation system to facilitate the flow of goods between town and country, and the exchange of goods between different regions.

By late June, various Chinese media were publishing articles calling for experiments with such market-oriented practices as forcing state banks to compete against each other for deposit and loan business, and allowing domestic enterprises to issue stocks, bonds, and other securities. Perhaps the most notable shift, however, was the emergence of a host of articles advocating an early resolution of the price question. Prior to this time--

despite the view widely held by Western and Chinese economists alike that the entire experiment with market tools could not succeed within the framework of China's irrational prices--only the most daring advocates of economic reform suggested moving quickly to tackle the potentially explosive issue of price reform.

The October Party Plenum

The most irrefutable evidence of the reformers' strength came during the Third Plenary Session of the Chinese Communist Party's 12th Central Committee, which convened for a single day on 20 October to endorse a sweeping "Decision on Reform of the Economic Structure." The plenum was preceded by six days of "preparatory meetings," at which the document was presumably explained in detail to various constituencies, though it probably underwent litle change. The Central Committee's "Decision" committed the party to a comprehensive reform program that if, implemented as planned over the next five years, will change the face of Chinese socialism.

Although the decision is a bold and politically risky attempt to confront fundamental problems in the Chinese economy, it is not, in our view, a turning point for economic policy, nor is it a surprising announcement of some historic new trend, i.e. the reintroduction of capitalism. Rather, it represents an acceleration of the reform drive that began in late 1978, and a deepening of the shift away from concentration on rural policy and toward urban reform that Zhao introduced at the May NPC.

The document cites four characteristics of China's Soviet-style economic structure that have drained enterprises of their initiative and vitality:

-- The lack of clear distinction between functions of government and industry.

-- "Excessive and rigid" state control.

-- An inadequate role for prices and markets.

-- The practice of "absolute egalitarianism."

It demands the creation of a "new socialist economic structure with Chinese charactertistics," where major assets continue to be owned by the state, but where enterprise managers are free to respond in a competitive way to market signals. In the words of the document, the party seeks to create a system where "ownership can be duly separated from the power of operation."

A New Relationship Between Government and Enterprise.

The structural changes called for in the decision are basically intended to remove the state and party from most day-to-day business decisions. To accomplish this, the entire national economic planning apparatus will be revamped. Strict mandatory plans, which previously dictated production and allocation quotas for most sectors of the economy, will now be applied only where essential commodities are involved.[2] According to the decision, other

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[2]China recently published a partial list of essential commodities, which included coal, oil and petroleum products, steel, non-ferrous metals, timber, cement, chemicals, electricity, munitions and other items. Agricultural products on the list included cereals, cotton, edible oils, tobacco, pigs and some aquatic products.

products and economic activities, which are far more numerous, should either come under guidance plans or be left entirely to the operation of the market.

Guidance plans are to be "rough and flexible" guidelines on how much of each particular good the state deems desirable. Enterprises will be required to give first consideration to these plans, but where local conditions make implementation of guidance plans unreasonable--for example, because of energy shortages or peculiarities in supply and demand--the firms will be free to deviate from plan without penalty. Enforcement of guidance plans will be accomplished mainly through the use of economic levers such as interest rates, bank lending policies, and taxes.

Enterprise management responsibilities are to be greatly expanded. Specifically, most enterprises are expected to become "relatively independent economic entities," responsible for their own profits and losses. Not only will they have more control over what and how much they produce and over their finances, they will also have authority--within as yet undefined limits--to hire and fire workers, to set wages and bonuses, and even to set product prices.

Although the new program calls for a weakening of the role played by state bureaucracies, their power nevertheless remains significant. By any objective standard, China's economy will remain socialist in its essentials. In addition to the continued importance of the central planning apparatus and strict control over products of national importance, the state will continue to appoint and remove key enterprise managers and hence to exert a powerful, if indirect, influence on production decisions. Moreover, when enterprises experience financial problems, it is the state that will determine which firms will be subsidized, and which will be forced to merge or shut down.

Price Reform--The Key to Success.

The plenum brought to an end the party's reluctance--perhaps for fear of sparking potentially destabilizing inflation, hoarding, and speculation--to come to grips with the problem of irrational prices. The plenum document explicity recommends establishment of a "rational price system," calling it "the key to reform of the entire economic structure." The fact that Beijing hopes to have its now totally irrational price system corrected in only five years is an indication of the party's commitment to rapid reform.

To carry out its program, Beijing will gradually reduce the number of items subject to state-set fixed prices. Most product prices will be allowed to fluctuate--according to changes in supply and demand--within narrow bands set by the state. Floating prices will be used for a small number of consumer products and for most services provided by individual entrepreneurs. For essential goods, the state will retain tight control, but major adjustments are probable even here as Beijing attempts to bring its raw material and energy prices into line with the current world economic situation.[3]

Recognizing the sensitivity of the local population to price changes--many Chinese remember the hyperinflation of the late 1940s--Beijing's plans for rationalizing prices are cautious. The plenum document emphasizes that price reform will be implemented "gradually, in a step-by-step" fashion. It promises that "the real income of urban and rural inhabitants will not go down as a result of price readjustments." The document also warns potential entrepreneurs that it is "absolutely impermissible for any unit or person to boost prices at will by taking advantage of the reform."

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[3]Coal, which is greatly underpriced in China, will probably be one of the first targets of state-controlled price adjustment.

The Short-term Outlook

The current effort to speed up industrial reform came too late to have much impact on economic performance in 1984. Even so, the economy will probably boast rapid growth again this year. Industrial production rose at an 11.6-percent rate in the first six months of 1984 with light and heavy industry moving at matching rates of 11.5 and 11.7 percent respectively. We estimate that China's GNP for the year may rise 10 percent. Energy output during the first half increased a 7 percent; however, we believe that output for the year as a whole will run about 6 percent, because of fourth quarter problems in the power sector.

The agricultural sector is also expected to perform well again this year. Grain production may top the record harvest of 1983 by 5 percent. Despite the increase, the PRC claims it will honor import commitments under its grain agreements with the United States, Canada, Australia, and Argentina. The record harvests are, however, making it less likely that China will want to renegotiate expiring agreements. Cotton output will probably also rise sharply again this year, perhaps by as much as 20 percent. (C)

There are preliminary indications that the domestic financial situation may also be mending somewhat. State revenue collections reportedly rose 23 percent during the first six months of 1984 as Beijing's new Audit Administration began conducting spot checks on enterprises across the country. On the expenditure side, however, Beijing apparently continues to be plagued by large price subsidies and increasing demands for budgetary outlays for infrastructure. We expect China to run about a 6 billion yuan deficit for the year, slightly less than in 1983, but considerably larger than the fiscally conservative government prefers.

China's international financial picture--already one of the strongest worldwide--will probably improve further in 1984. So far this year, preliminary figures show exports continuing to outpace imports by a wide margin. Although we expect this trend to begin reversing itself soon, export growth will remain strong during the year--at about 10-15 percent. Imports could approch $24 billion or a growth rate of 25-30 percent on the strength of Western equipment and technology sales. The resulting $2-4 billion trade surplus will probably boost total reserves to more than $23 billion by December 1984, and China's debt service ratio could drop another percentage point to less than 5 percent.

Economic Problems Ahead.

Introducing price reform into China's shortage-driven economy probably poses the most immediate threat to the reform program. The plenum's call for price reform reportedly sparked a few bank runs and some panic buying last month, despite assurances that prices would be adjusted slowly and that consumer income would not be allowed to suffer. Further problems can be expected as Beijing attempts to bring prices for essential goods such as cereals, industrial raw materials, and coal into line with costs.

Beijing is committed to immediate price adjustment, but it also clearly recognizes the potential for panic that price reform raises, and will move very deliberately to implement changes. In fact, we believe the risk that the leadership will move too slowly with essential price adjustments (and stall the entire reform package) is greater than the risk that too rapid an advance will spark economic instability. Nevertheless, it is safe to assume that price reform will be somewhat inflationary in the short run. Most adjustments will probably be upward, and important products such as coal, oil, and certain

foodstuffs will eventually undergo steep revisions. The reforms may occasionally spark bouts of panic buying as consumers draw down savings deposits that are now at record levels. Beijing is most likely to respond to these periodic bouts by limiting bank withdrawals, ordering producers to hold the line on prices, and by raising interest rates and taxes to discourage consumption.

Another economic hurdle that the leadership must cross in the immediate future is the question of corporate bankruptcy. Last year, nearly one-fourth of China's industrial enterprises were unprofitable, and this year, even after the government exerted strong pressure for improvement, 16 percent are still operating in the red. Clearly, Beijing cannot allow a massive shutdown of such a large portion of its industrial base. Furthermore, until reform is in place, there is no effective way of determining which enterprises deserve closing. Despite the fact that continued subsidization of losing enterprises encourages inefficient behavior all around, we believe Beijing will probably be cautious and allow a large number of inefficient firms to continue to operate.

Where the government decides some firms must be forced to close, the accompanying unemployment problems may be locally destabilizing. Beijing has historically prohibited the free movement of the population in order to prevent massive migration from the countryside to the cities. If major industries are allowed to fold, certain geographic areas could face high unemployment rates for long periods of time. We believe this problem will reinforce Beijing's inclination to accept inefficiency rather than promote other serious problems.

In light of the many problems, we do not expect the benefits of urban reform to match those experienced under the agricultural reform program. But

neither does Beijing. The government is allowing itself five years to get the program in place and probably will hail even minor improvements in efficiency during that period as evidence of success. The fact that Beijing is going into this program with its economic eyes open increases the probability that it will be able to resist pressures to revert to tight central planning when problems arise. Nevertheless, the next year will provide a critical test of the government's willingness to accept the dislocations necessary to carry the program through.

Longer Term Prospects

The Agricultural Sector--More Gains

In the longer term, the question of how well the economic reforms will achieve China's avowed goal of quadrupling output by the year 2000 depends critically on several factors. In agriculture, many of the productivity gains accompanying the introduction of the contract responsibility system were one-time achievements. Future gains will probably come more slowly as farmers gradually introduce new technology and as more underemployed laborers leave the land to pursue non-agricultural employment. Nor can Beijing's good luck with weather continue indefinitely. Consecutive years of widespread natural disaster could cut crop yields dramatically, especially if laborers under the contract responsibility system resist leaving their own plots to engage in dike repair or rescue operations that may not be directly beneficial to them.

Other factors, however, bode well for continued improvement in agricultural productivity. The rapid increase in production of consumer durables will continue to motivate Chinese farm workers. Commercial reforms

that speed the delivery of farm goods to urban markets and urban goods to the rural sector will also help. If banking reforms boost domestic interest rates further, as we anticipate, this too should give the already cash-rich rural population additional incentive to boost agricultural output.

On the whole we believe the positive factors outweigh the negative and we anticipate annual gains in the value of agricultural output of between 5 and 7 percent over the next few years. The gains should enable Beijing in most years to devote the bulk of its foreign exchange reserves to equipment and technology rather than to agricultural imports. Nevertheless, as both rural and urban incomes expand, food consumption will probably also rise sharply. This--combined with the massive problem China already has in moving grain to urban consumers--will, we believe, result in continued purchases of sizable quantities of US grain, even in years of better-than-average weather. Poor climatic conditions in consecutive years would probably deplete grain reserves and bring China back into world markets in a big way.

Military--More Technology But Limited Expenditures

With the renewed emphasis on economic reform we expect defense spending to remain at relatively modest levels. To bring about qualitative, if gradual, improvement of defense capabilities and to appease the military leadership that is eager to modernize, Beijing will, however, probably continue to increase the import of Western military-related technology. The purchase in 1984 of 24 Sikorsky medium lift helicopters for $150 million is evidence of this turn westward. The military has a strong economic argument in support of its desire to boost imports; since 1979, exports of Chinese military hardware abroad have generated several billion in foreign exchange, well in excess of anything currently being requested.

Industry--Major Obstacles Ahead

Long term success in the industrial sector depends heavily on how fast and effectively some of the new reforms can be implemented. Despite Deng's efforts, there is still considerable opposition within the party bureaucracy to further expansion of the reforms. There are those with grave ideological reservations about the program, and those who fear that Deng's concomitant demand that the party upgrade the expertise of party leaders, as well as enterprise managers, will cost them their jobs. Since the task of implementing new reforms rests heavily on these mid-level cadre, we expect progress to be neither smooth nor rapid, as they seek by various bureaucratic methods to impede the progress of changes they view as threatening.

Beijing already has achieved some success in removing party cadre from the economic decisionmaking process and installing trained technicians in their place. Hu Yaobang recently told Japanese officials that nearly 1 million veteran cadre have left their posts since the government began its efforts to upgrade its managerial expertise, and 2 million will have retired by yearend 1984. Further progress in this political aspect of reform will improve the chances for overall success.

Other institutional changes needed to buttress reforms will probably continue to develop slowly. Despite major reforms in the banking system, there is evidence that local pressures, not economic factors, continue to determine the direction of loans. Nor has Beijing been very successful at replacing budgetary allocations with loans. This suggests that enterprises still lack the incentives necessary to force them to make efficient investment decisions. The productivity of capital is unlikely to show marked improvements until Beijing achieves better results with its banking reform.

Efforts to revitalize the commercial system may generate considerable efficiency gains. The difficulties that stem from China's inadequate road and rail system are compounded by bureaucratic problems that accompany tight state control over transport activities. Although it would take a masssive investment program to eliminate Beijing's transportation problems, we believe that the increased involvement of individuals and cooperative enterprises in middleman activities will alleviate a significant number of the distribution problems that now plague Chinese industries.

We anticipate that, over the longer term, devolution of the decisions on hiring, firing, wages and prices to managers will improve enterprise efficiency. As more enterprises are required to market their own products, quality will undoubtedly improve and a wider variety of goods can be expected on Chinese markets. Since small firms producing nonessential goods will be given the most leeway, they will probably be the first to show marked improvements. Progress within large, state-run enterprises producing major goods will, we believe , occur more slowly.

Despite some short term problems as the government carries out price adjustment policies, we do not believe there is significant risk of serious long-term inflation. For this to occur, the government would have to be willing to sustain the increases in consumer demand by printing money. Although some subsidies or wage increases will be offered in the early stages of the adjustment process--to help ease concerns about eroding purchasing power--the conservative government is unlikely to resort to long-term use of the printing press to finance consumer spending.

On the whole, we believe the gains from current reform will lead to some efficiency gains as early as next year. Although Beijing is likely to be disappointed at the rate of progress, the fact that the economy is moving in

the right direction should give impetus to further change. If, however, Beijing backs away from price reforms, the overall reform program could lose steam rapidly. Under such a scenario, Beijing might be forced as early as 1986 to move back toward greater central control.

If Beijing can resist political pressure to ease off on reforms in the face of mounting problems, we believe long-term productivity will increase and economic growth will accelerate. Government efforts to encourage surplus labor to take up private commerce and service activities have considerable potential for increasing both agricultural and industrial productivity. The renewed emphasis on enterprise autonomy also bodes well for productivity increases, some of which will go unobserved in Beijing as enterprises attempt to understate profits to avoid taxes.

A final threat to the continuing rapid advance of economic reform is the health of China's 80 year old leader, Deng Xiaoping. Although Deng's successors are firmly committed to the reform policies--and indeed, Hu Yaobang and Zhao Ziyang have staked their political futures on success--they still lack Deng's political clout and tenacity. If one of the more prestigious advocates of central planning--such as Peng Zhen, Li Xiannian or Chen Yun--is able to succeed to Deng's pivotal role as power broker and final authority, we believe that he might at least attempt to curb some of the more experimental aspects of reform. In our view, however, a modicum of success for economic reform programs will enhance the prospects for Hu and Zhao to succeed Deng smoothly.

A Worst Case Assessment.

Deng and his allies have indicated they expect that the early going will be rough and are prepared to ride out short term problems, such as panic

buying and isolated runs on banks. If those problems persist, or get worse, critics of reform will almost certainly seize on the dislocations to call for a return to direct central control, even though this alternative has demonstrably failed to promote efficiency in the past. Although reform advocates seem to hold the balance in party councils now, party and military conservatives could coalesce into a potentially powerful political bloc if economic problems became socially destabilizing.

Even if Beijing manages to weather its inevitable short-term problems, Deng's death or a combination of incremental breakdowns--such as floods, drought, a succession of poor harvests, a rapid rise in undesirable side effects of economic expansion such as price gouging, speculation, or graft--could over the longer term tip the political scales against reform and lead to a retreat.

Retrenchment on reforms would confront the party with serious sociopolitical difficulties as it sought to reassert its control down to the local level. At a minimum, the party leadership would again be seen as vacillating and unconcerned with the common welfare, precisely the image it seeks to dispel by implementing new policies. At worst, disaffected peasants or workers might engage in active or passive resistance. The failure of reform would almost certainly bring on a protracted period of political instability, as leaders struggled for the right to affix the blame.

Implications for the United States

In our judgment, implementation of the reforms will both broaden and deepen China's ties with the United States and the West. The emphasis on technological innovation at the plant level, foreign capital acquisition, and increased joint ventures will expand investment and trade opportunities for US

and Western businesses. In addition, we expect that Chinese enterprise managers will take advantage of their new flexibility to tap the West for increased amounts of information, training, and managerial expertise.

At the same time, however, the reforms will aggravate some current problems in US-China relations. It can be expected that Chinese enterprises will want greater access to Western markets to sell their products--largely textiles and light industrial goods--so Beijing's pressure on Washington to lower trade barriers will increase. Similarly, Beijing will probably press Washington harder on technology transfer in response to both its needs for economic and military modernization and the demands of its own enterprises. It is also likely that China will reduce its grain imports from the West as its agricultural production continues to improve.

In the five years since the "open door,"--one of China's most fundamental reforms--was introduced, two-way trade with the United States has burgeoned from $1.1 billion in 1978 to a peak of $5.5 billion in 1981 before receding slightly to $4.4 billion last year. US investors have reportedly put $90 million into joint ventures in China, US oil companies have probably spent an additional $300 million in offshore oil exploration, and Occidental Petrolemm Company is involved in a coal mining joint ventures that may generate $400-600 million in machinery, equipment, and technology sales. As long as the reformers continue to hold China's economic policies we believe these economic ties with the West will expand.

Beijing's continued success with economic reform could also prove to be a tempting example for other countries struggling with central planning. Chinese economists have already spent a great deal of time studying East European experiments with economic reform. Articles in Chinese economic journals have been especially favorable toward the Hungarian experiment where

major reforms have been under way since 1968. Beijing is also reportedly encouraging the North Koreans to learn from the Chinese reforms and relax their tight control over the economy. As China's program proceeds other countries--including some LDCs and even a few of the East European nations that China patterned its early reforms after--may look more closely at making wider use of market-oriented programs.

Senator PROXMIRE. Gentlemen, I want to thank all of you, Mr. Gates, Mr. Noren, Mr. Licari, Mr. Carver, and commend you for your excellent testimony and the comprehensiveness and high quality of the prepared statement on the Soviet Union and China.

In the interest of getting information to the public as soon as possible, I would like you to sanitize the statement you gave us, so it can be released, hopefully in the next 2 weeks or so.

The entire transcript will eventually be printed in sanitized form, after we have heard from the Defense Intelligence Agency.

Again, I want to thank you and your staff for the fine work you're doing, and your appearance today. Thank you very much.

[Whereupon, at 12:25 p.m., the subcommittee adjourned, subject to the call of the Chair.]

China: Selected Economic Indicators
(1979-1984)

	1979	1980	1981	1982	1983	1984(est)
Growth in GNP (percent change)	7.0	6.4	4.9	8.3	9.1	10
Gross Value of Industrial Output (percent change)	8.5	8.7	4.1	7.7	10.5	13
Heavy Industry (percent change)	7.7	1.4	-4.7	9.8	12.4	13
Light Industry (percent change)	9.6	18.4	14.1	5.7	8.7	12
Output of Selected Products						
Grain (million tons)	332.1	320.6	325.0	354.5	387.3	400-410
Raw Cotton (million tons)	2.2	2.7	3.0	3.6	4.6	5-5.5
Cloth (billion meters)	12.2	13.5	14.3	15.4	14.9	14
Watches (million units)	17.5	22.7	29.1	33.1	34.7	36
Sewing Machines (million units)	5.9	7.7	10.4	12.9	10.9	9.5
Bicycles (million units)	10.1	13.0	17.5	24.2	27.6	28
Volume of Freight Traffic (percent change)	11.0	5.6	1.0	6.8	7.2	N.A.
Volume of Passenger Traffic (percent change)	12.9	15.9	9.6	9.8	12.8	N.A.
Total Energy Production (million tons standard fuel)	645.6	637.2	632.2	667.7	712.6	759
Oil (million tons)	106	106	101	102	106	114
Coal (million tons)	635	620	622	666	715	760
Natural Gas (billion cubic meters)	14.5	14.3	12.7	11.9	12.2	12
Hydropower (billion kilowatt hours)	50.1	58.2	65.5	74.4	86.4	83.2
Exports (billion US$)	13.7	18.9	21.5	22.9	23.5	27
Imports (billion US$)	14.4	19.3	18.0	16.7	18.3	24
Foreign Exchange Reserves (billion US$)	2.2	2.5	5.0	11.3	14.9	23

ALLOCATION OF RESOURCES IN THE SOVIET UNION AND CHINA—1984

TUESDAY, JANUARY 15, 1985

CONGRESS OF THE UNITED STATES,
SUBCOMMITTEE ON INTERNATIONAL TRADE,
FINANCE, AND SECURITY ECONOMICS
OF THE JOINT ECONOMIC COMMITTEE,
Washington, DC.

The subcommittee met, pursuant to notice, at 10 a.m., in room SD-562, Dirksen Senate Office Building, Hon. William Proxmire (vice chairman of the subcommittee) presiding.

Present: Senators Proxmire and Symms.

Also present: Richard F. Kaufman, general counsel.

OPENING STATEMENT OF SENATOR PROXMIRE, VICE CHAIRMAN

Senator PROXMIRE. The subcommittee will come to order.

Once again, I am pleased to welcome Maj. Gen. Schuyler Bissell, Deputy Director of the Defense Intelligence Agency to our hearings on the allocation of resources in the Soviet Union and China.

General Bissell has requested only the Soviet Union be addressed in today's proceedings. Although we have been conducting these annual hearings in closed session for 11 years now, it is a good idea to remind ourselves and everyone in the room that classified information will be discussed and that every caution must be taken to guard against the unauthorized release of anything that transpires in this room, or of any statement or the material submitted to the subcommittee as classified information.

We have been extremely careful and fortunate in that not a single leak or incident involving unauthorized disclosure has occurred in all the years since we initiated this exercise, 11 years ago.

We intend to maintain that record.

This morning's testimony concerns mostly the defense sector of the Soviet economy. Since 1983, we have been hearing about new trends in the Soviet defense spending. We learned for the first time in 1983 that the rate of growth of Soviet defense has slowed significantly since 1976.

There is agreement within the intelligence community that a slowdown took place beginning in the mid-1970's, although there is some disagreement over the degree of the slowdown. The fact that a slowdown took place is of enormous importance as is the fact that it took us years to find out about it.

However, there now seems to be emerging major differences between the CIA and the DIA, differences we have never had before, over the size and the trend of the Soviet military burden and over the rates of defense growth in the past 2 years.

These differences, as this hearing will show, have reached disturbing, if not alarming, proportions. It is my view that it is urgent to try to resolve these differences, and the subcommittee hopes to play a constructive role in this process.

General Bissell, how long a statement do you have?

General BISSELL. Sir, about 40 minutes.

Senator PROXMIRE. OK, sir. Go right ahead. I think we are going to be here quite a while. I have quite a few questions, too. But you go right ahead.

STATEMENT OF MAJ. GEN. SCHUYLER BISSELL, DEPUTY DIRECTOR, DEFENSE INTELLIGENCE AGENCY, ACCOMPANIED BY JEROME WEINSTEIN, CHIEF, INDUSTRIAL ECONOMIC SECTION; EDWARD QUAM, DEPUTY CHIEF, INDUSTRIAL RESOURCES AND ECONOMICS DIVISION; AND SAM CRAWFORD, CHIEF, MILITARY MATERIEL BRANCH

General BISSELL. Very well, sir.

Senator, I am accompanied today by Mr. Jerome Weinstein, who is the Chief of the Industrial Economic Section, and by Mr. Edward Quam, on my immediate left, the Deputy Chief of the Industrial Resources and Economics Division; and on his left, Mr. Sam Crawford, the Chief of Military Materiel Branch.

ASSESSMENT OF THE ALLOCATION OF RESOURCES IN THE SOVIET UNION AND SOVIET MILITARY ECONOMIC PERFORMANCE AND TRENDS

My testimony today will cover the Defense Intelligence Agency's assessment of the allocation of resources in the Soviet Union and Soviet military economic performance and trends. It will be presented at the secret level.

The results of our analysis of the Soviet military economy over the past year lead us to two significant conclusions. First——

Senator PROXMIRE. Before you proceed, I hope you can sanitize this hearing just as soon as you possibly can, because I think that this hearing is of great significance for the Congress.

Until we get them sanitized, of course, we cannot discuss them, debate them—we shouldn't and we won't. But at the same time, this is so important that I would hope that you can do this in a matter of a week or two, if possible.

I know it is very hard. But this is very important information. We are going to have to act rather quickly on the budget. I think the information you aregiving us today could have real significance.

General BISSELL. We will work on it as quickly as possible.

Senator PROXMIRE. Thank you, sir.

SOVIET MILITARY BUILDUP

General BISSELL. As I mentioned, the results of our analysis of the Soviet military economy over the past year lead us to two significant conclusions. First, as a direct result of the continuing

growth of the military sector at rates exceeding overall economic growth, we estimate that the share of national resources that the Soviet leadership is willing to devote to the military has increased.

While at the beginning of the 1980's, the military's share of gross national product was 14 to 16 percent, it has now risen to 15 to 17 percent of gross national product as we enter the middle of this decade.

Second, the rapid growth in the dollar value of major Soviet weapon systems evidenced in 1983 has continued into 1984. We believe that this trend will continue. These 2 years of significant growth mark a clear departure from the earlier 1976–82 period, during which the dollar value of military procurement showed little or no growth.

These findings underscore our view of the Soviet Union, and the overall direction if its military economy.

For the past quarter century, we have witnessed the continuing growth of Soviet military power at a pace that shows no signs of slacking.

All elements of the Soviet Armed Forces, the strategic rocket forces, the ground forces of the army, the air forces, the navy and the air defense forces, continue to modernize with an unending flow of new weapons systems.

Underlying Soviet military power is a vast and complex industrial system designed to focus the resources of the Soviet state on the capability to wage war.

The Soviet buildup is made possible by a national policy that has consistently made military materiel production its highest economic priority.

Today's testimony will provide an integrated picture of the Soviet Union's military economy and its growth over the past two decades. Our estimates of Soviet military spending are one of the major bases of our conclusions.

Although there are methodological and conceptual uncertainties in these estimates, they do not affect the overall trends. We will start out with a discussion of these uncertainties. We will then look at the military economy's rapid development during the 1965–75 timeframe, followed by a discussion of some of the changes we observed between 1976 and 1982.

Finally, we will discuss the 1983–84 period and our estimates of the growth and size of the Soviet military program. To better understand what is happening, it is important to view developments from the Soviet perspective, especially the context in which the leadership makes resource allocation decisions and determines their overall military requirements.

For this reason, our analysis of the Soviet military program and the economic and industrial support required for its growth is based on the examination and use of Soviet statistics, as well as conventional intelligence sources and methods.

In this way, we hope to better reflect the extent of the Soviet commitment to their military and how they have achieved and sustained a high level of development.

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MILITARY BURDEN

One of the main purposes in our analysis of the Soviet Union's military economy is to estimate the share of the nation's resources devoted to the military, normally expressed as a percentage of gross national product.

Currently, the estimate of this share represents a fairly narrow concept of defense. This concept does not fully represent either Soviet practices or the pervasiveness of the military throughout the economy.

While we do not know exactly what the Soviet definition of "defense" includes, we are certain that it is much broader than what is reflected in U.S. estimates. If these Soviet practices reflecting the primacy of the military were included, they would serve to increase the estimate, which would then more accurately reflect the "full cost of defense" to the Soviet Union.

These practices cover several areas. For example, the preference accorded to military production and R&D over civilian counterparts in obtaining the best scientists and engineers and the most advanced domestically developed and foreign technologies. Also included would be subsidies provided by the nondefense sectors, such as the extensive system of premilitary training intended to prepare Soviet youth for military service.

It is difficult to estimate the overall impact such factors would have, but it is most likely that our current estimate of GNP devoted to the military would be substantially higher.

This estimate of the share of resources devoted to the military is made in current ruble terms. The use of current rubles may overstate some measures of growth under certain circumstances. For our purposes, however, a ruble measure in current terms is absolutely necessary for estimating the share of resources devoted to the military. This estimate must be done in current prices so that the prices used represent the value of the resources currently being consumed.

DOLLAR COST ESTIMATES

I will now turn to a discussion of the dollar measures of the Soviet military program. They are not comparable to the ruble measures we have just discussed. While the current ruble estimates attempt to replicate the perspective of the Soviet decisionmaker, the dollar estimate is meant to provide a measure of Soviet military programs which is comparable to United States military outlays.

To do this, the dollar costs are estimates of what U.S. expenditures would be if the United States pursued the same development, investment, and manpower programs as the Soviets, and operated the resulting force as the Soviets do. The estimated dollar cost of the Soviet military activity therefore does not represent the value of the resources allocated to the Soviet military.

There are some aspects of this dollar, or direct costing, approach which present conceptual and methodological problems, particularly with respect to the procurement component.

First of all, the estimate is subject to uncertainty; inherent in any estimating process, however, the procurement measure, espe-

cially, is built up from a very large number of individual elements, each of which in turn must be estimated.

These elements range from production of very large, easily identifiable systems, such as aircraft carriers, to very small items, such as radios and rifles, which are not so easily accounted for, and which may not even be estimated directly.

Furthermore, production estimates are often based on analytical judgments, rather than observable data; for example, we do not see some [security deletion].

While we cannot suggest a specific range of uncertainty, we believe that the overall estimate should be treated as just that: an estimate, and not a hard and fast data point. The annual growth rates should be considered as being plus or minus a couple of percentage points.

Also, because the methodology for estimating the dollar costs measures the output, or what is visible, the results may not necessarily reflect the extent of the resource flow into the military sector.

Another pitfall of using dollar growth rates is that the dollar measure reflects a definition of "defense" which is not Soviet, but Western. The definition of "defense" which is used in producing these estimates was largely driven by the desire to have both United States and Soviet accounts in directly comparable terms.

Therefore, some activities have been excluded because comparable activities do not exist on both sides; construction troops and civil defense, for example.

Finally, and particularly applicable to the costs of newly developed weapons systems, the dollar costs may not adequately reflect the Soviet experiences in bringing into production an entirely new system which is on the cutting edge of their technology.

If the United States already has experience in a manufacturing technology which the Soviets are just initially incorporating into the production of a new weapon, the estimated U.S. cost of manufacturing this Soviet system may well reflect this U.S. experience and efficiency and not the difficulties and higher costs associated with first-time use of a new technology.

TRENDS, 1965–75

None of the points just raised negate the use of military spending estimates; rather, they suggest that the data should be used with caution and understanding. These estimates are most useful when combined with other indicators of Soviet military developments, as we will now do, starting from the 1965–75 base line.

The increase in Soviet military expenditures from 1965 to the mid-1970's was a reflection of both the expansion of Soviet military forces and an across-the-board improvement in the quality of weapons and equipment.

The most significant increases in force size took place in tactical aviation and ground forces, especially those along the Sino-Soviet border, and in strategic missile forces. In addition, Soviet military manpower increased by about [security deletion].

The economic priority accorded to the military during that decade is clearly shown in the growth rate of that part of industry

which is the primary manufacturer of military hardware and equipment.

That part consists of the nine military machinery-producing ministries, as shown here, along with their main product lines. The civilian portion of the machinery branch is made up of 11 ministries, which primarily produce investment goods and consumer durables. The output of these nine military machinery-producing ministries grew faster than any other part of the economy, averaging almost [security deletion] percent a year.

Examination of the Soviet labor force, one of the key inputs necessary for economic growth, reveals a similar picture of military priorities. Growth rates in the labor force of the military machinery-producing ministries was faster than in the entire machinery branch, which in turn grew faster than industry overall.

Other selected industries required to support military production were also expanding during the 1965–75 period. One of the most illustrative examples was the development of the titanium industry to support the ALFA-class submarine and aerospace programs.

The Soviets went from being a nonproducer [security deletion] to the world's largest, most sophisticated producer and fabricator of titanium by the late 1970's. Output expanded by almost [security deletion] percent per year in the 1965–75 period.

Overall, key metallurgical industries vital to strategic systems development, shown here, acquired and further developed state-of-the-art technologies to meet the demands for sophisticated materials. There is not just a simple supplier-consumer relationship between these so-called civilian industries and their military customers.

Many of the enterprises producing these materials are dedicated solely to the satisfaction of military needs. For example, five key aluminum-producing plants, rather than operating under the aegis of the Ministry of Nonferrous Metallurgy, are directly controlled by the Ministry of the Aviation Industry. These five plants represent about [security deletion] percent of the Soviet Union's rolled aluminum output.

Physical plant expansion of military production facilities grew at a rate of about 3 percent annually. Major expansion of existing enterprises and the building of entirely new facilities occurred at major plants, such as the [security deletion] and [security deletion] plants, the [security deletion] plant, and the huge Kama River plant which produces both civilian and military trucks.

[Security deletion.]

All [security deletion] shipyards that specialize in naval construction expanded or improved since 1965, with the number of building positions increasing by more than [security deletion] percent since 1975. The expansion here represents the addition of [security deletion] square meters.

For comparative purposes, each of the highlighted [security deletion] will hold a ship the size of a [security deletion] or a building the height of the [security deletion].

In addition, there are almost continuous expansion of missile and aircraft production facilities, to accommodate the building of new weapon systems. The large building highlighted in this [security de-

letion] plant is some two and a half times larger than the area covered by the U.S. Capitol.

All of this industrial growth and development manifested itself in the Soviet Union's advanced capabilities to manufacture weapon systems. Shown here are some examples of the numbers of weapons produced during this time period.

TRENDS, 1976–82

The growth and developement of the military economy and the total military program observed during this timeframe continued throughout the 1976–82 period as well. Although the rate of growth in the military program slowed somewhat, it still exceeded that of industry and the overall economy. As a result, the military sector continued to absorb an increasing share of the Nation's economic and industrial resources.

The high growth rates of national income, and particularly of the military machinery-producing sector, between 1965 and 1975 were not sustainable in the 1976–82 period. The economy had grown to such a size that the absolute additions each year represented a smaller percentage of an expanding base.

The result was slower growth rates, despite the fact that the economy as a whole continued to expand and to produce more and more output each year.

At the same time, a number of factors, such as the economy's increasing complexity, were impacting unfavorably on growth rates. Some of the factors causing concern in the 1976–82 period are shown here.

It should be noted that many of these problems were decades old and not at all new to the Soviets. Despite their existence, economic growth continued, largely because the Soviet Union has an extremely large economic and industrial base which, even when operated inefficiently, still accomplishes its highest priority objectives.

The Soviet Union has the richest natural resource base in the world and is self-sufficient in strategic minerals and energy. The relatively cheap and accessible material resources, however, were being depleted and the additional resources required for production were and still are becoming relatively more difficult and costly to obtain. More capital investment was required to maintain output at existing levels.

The amount of labor added to the work force each year has also been continuing to grow in absolute terms since the mid-1970's. But the actual number of working-age people available to join the labor force each year has been limited by low birth rates.

Additional increments of labor have been growing smaller, and will continue to do so through the mid-1980's. This labor shortage problem has been most acute in the industrialized western areas and Siberia, where labor has been and will continue to be most in demand.

Recognizing the growing difficulties in acquiring inputs of materials, manpower, and capital, the Soviets began to emphasize the need to use production inputs more efficiently and effectively in the 1976–80 5-year plan.

Traditionally, growth in the Soviet economy had been achieved by using ever-increasing quantities of inputs. The change in growth strategy to more productive use of resources has been difficult for the Soviets to accomplish.

In addition to recognizing the above problems, the Soviet leadership has also had to address growing sectoral difficulties, particularly in agriculture and transportation. Although annual agricultural output across the board by the 1980's was more than the amount produced annually during 1965–75, the yearly increments have not kept pace with population increases.

The transportation network in the Soviet Union continued to carry more freight each year throughout the 1976–82 period. However, mismanagement of the rail and distribution systems had begun to create transportation bottlenecks by the late 1970's.

The need to divert rail capacity to support Soviet policies in Iran, Afghanistan, and Poland added to the problem. The shortfalls in agricultural products, requiring the importation of large amounts of grain, carried inland by rail, further taxed the system. The resulting disruption in the flow of supplies to both civilian and military-related plants caused considerable concern for the Soviet leadership.

As the economy has expanded and become more complex and more difficult to plan and control from the center, systemic problems have become increasingly pronounced and more formidable to overcome, the system creates institutional attitudes which stifle initiative and innovation.

These kinds of disincentives have made it extemely difficult to switch to an intensive growth strategy and to further improve the industrial and technological base of the economy.

Where incentives do exist, and the prevailing management atmosphere is supportive of technical innovation and change, there has been great progress, as evidenced in the military sector.

Despite these difficulties, the economy continued to expand during 1976–82, with industry leading the way. National income growth averaged slightly less than 4 percent annually for the period.

Although slower than before, this growth still represented large absolute additions to the nation's wealth. Within the industrial branch, the machinery-producing sector continued to grow faster than the overall economy and industry as a whole. The growth in the machinery-producing sector was driven by the faster average annual growth rate in the nine military ministries, than in the civlian ministries.

This more rapid growth of the military-related portion of the economy was also evidenced by the labor force. The military-industrial labor force grew, on average, about [security deletion] percent faster than the Soviet industrial labor force as a whole.

The highly directed growth of the metallurgy industry has been one of the means by which we observe the continuing priority of the military and its state of the art.

The Soviets have recently stressed the production of quality throughout the industry, a shift in emphasis which would benefit all users. However, most of the capital investments to accomplish

this goal are being made in those areas of the industry controlled by the military industrial ministries.

Here are several examples of recent growth:

The uranium and [security deletion] industries, where research and production expansion suggest large nuclear weapons and nuclear energy programs.

All expansion of sophisticated refining capacity in the steel industry has been confined to those specialty steel plants which are designated producers for military materiel. Expansion at several of these plants has been significant.

The [security deletion] industries have expanded production significantly to meet the demands for [security deletion] use in military systems, and for [security deletion].

The [security deletion] industry, where an enormous effort is under way to produce [security deletion] by a sophisticated electrolysis process. Fabrication facilities' expansion suggest heavy [security deletion] application, as well as [security deletion] production.

In addition, it should be noted that the area of expansion shown in the right-most portion [security deletion] represents new capacity of approximately [security deletion] which is over [security deletion] times the total U.S. production.

Expansion in military material production facilities also continued during this period, averaging about 3 percent annually. The examples of plant expansion shown here are representative of all sectors of the military production industry.

The new construction hall, shown here, covering almost [security deletion] square meters, is large enough to have [security deletion].

The investment and expansion in the Soviet military research and development program continued throughout this period. The growth is evidenced by the almost 200 military system developments over the past decade, as summarized here.

There are about [security deletion] military-related research facilities, occupying approximately [security deletion]. This floor space has been increasing by [security deletion] expansion we have seen throughout the military industrial sector.

More than 800,000 full-time equivalent scientists and engineers are engaged in R&D, the best and brightest working on military programs. Overall, it is estimated that about [security deletion] are currently involved in military R&D, with total military R&D manpower growing at around [security deletion] per year.

SLOWDOWN IN PROCUREMENT GROWTH RATE

The rate of growth in the military program, as measured in ruble terms, grew at a slower rate during 1976–82 than it did during the early 1970's. Procurement was the most significant factor in the overall slowdown.

It is important to note, however, that the level of procurement during the 1976–82 period was extremely high, due to the buildup of the Soviet military during the earlier decade.

Thus, the Soviets were unable to undertake and pursue a sweeping force modernization program, which continued to add substantial amounts of weapon systems into the forces, generally characterized by significant advancements in sophistication.

In naval systems, four nuclear ballistic missile submarines joined the fleet, most notable being the Delta III and its seven MIRV'd SS–N–18, and the Typhoon with its six to nine MIRV'd SS–N–20's. These missile systems have greater range and better accuracy than earlier systems.

[Security deletion] major surface ships were introduced, including the first Soviet aircraft carrier, the *Kiev*; the first nuclear-powered surface combatant, the *Kirov Cruiser*, with increased sustainability, and the new gas turbine-powered cruiser, *Slava*. Both cruisers carry an advanced vertical-launch SAM system and antiship cruise missiles.

Four classes of general purpose submarines joined the fleet. The largest, the *OSCAR*, carries 24 antiship, 300 NM range cruise missiles. The *ALFA* is believed to be the fastest submarine in the world, with submerged sustained speeds of 40 knots.

Fixed wing combat aircraft capabilities also increased dramatically over this period. In the interceptor force, less than 10 percent of the aircraft possessed even a limited look-down/shoot-down intercept capability in 1976, but over [security deletion] percent of the force had this limited capability by 1982.

Additionally, by 1981, the Soviets began to deploy their first interceptor with a true look-down/shoot-down capability, the Foxhound.

The tactical aircraft force experienced similar improvements which provided increased range, payload, and avionics capabilities. Indicative of the continued force improvements in strategic/theater air forces is the *Backfire* bomber. It offers excellent design for a variety of roles: [Security deletion].

New models of tanks and armored personnel carriers, self-propelled artillery, tactical missiles, new air defense and antitank systems and new models of helicopters have all been introduced into the ground force since 1976. The trend has been toward larger and more heavily armed units.

Soviet multiple rocket launchers and artillery increased both in numbers and new models, with the introduction of self-propelled artillery and mortars. Deployment of the BM–27 multiple rocket launcher began, replacing the older systems which existed since the end of World War II.

During 1976–82, both firepower and mobility in Soviet maneuver forces was evident with the development and deployment of these systems and the introduction of nuclear-capable artillery. These changes are clearly designed to give the Soviets the organization and equipment required to conduct large-scale, fast-moving combat operations, particularly in the European theater.

In land-based strategic missile systems, the Soviets deployed the SS–17 Mod 3 with 4 MIRV's, the SS–18 Mod 2 with 8–10 MIRV's, the SS–18 Mod 4 with 10 MIRV's and the SS–19 Mod 3 with 6 MIRV's, the latter two with much improved accuracy over older systems.

The first mobile intermediate-range MIRVed ballistic missile, the SS–20, was also deployed, with increased range, MIRV capability, improved accuracy and much greater survivability over the older systems it is replacing, the SS–4 and retired SS–5.

POSSIBLE REASONS FOR SLOWER GROWTH

The Soviets were able to achieve these substantial improvements in capabilities during a period of time in which military procurement increased less rapidly than in the earlier decade. There is a broad range of possible reasons that may account for this change in the growth pattern of procurement. These include such conventional, and generally random factors as:

Transportation and distribution problems, wherein the rail transport system has apparently been unable to meet all the demands placed on it, and hence has been the cause of bottlenecks throughout the industrial sector.

Technological problems, which may have delayed the development or manufacture of a specific weapon system.

The weapons cycle itself, in which overall production falls for a period of time between full series production of a new system and the phasing out of the older system being replaced.

There is also the possibility that the slowdown may have been either deliberately planned, or tacitly accepted by the Soviet leadership. While there is no direct evidence that either implicit or explicit decisions were made with regard to military procurement, the length of time involved, some seven years, suggests something more than random factors or mere coincidence. There are, however, many different kinds of decisions which the Soviets might have considered, such as:

A decision to strengthen the nation's industrial base at the cost of temporarily slower growth in the military program in exchange for faster future growth in both the economy and the military.

A decision to modify their basic procurement strategy by stressing the incorporation of the newest technologies which require longer design, research, development, and production times for new weapons than in the past.

A decision to allow an explicit tradeoff between already high and rapidly growing R&D expenditures on the one hand, and more or less level procurement of weapons on the other. The military, given its share of economic resources, may not have been able to support many large and expensive weapons R&D programs while simultaneously expanding procurement of increasingly costly weapon systems.

One strong and recurring theme throughout Soviet military writings has been the need to incorporate the highest levels of technology into the new weapon systems. It is possible that the slowing in the rate of increase in procurement was aimed at developing and applying the most advanced technology to new weapon systems, rather than continuing the production and continued modification of older weapons.

This hypothesis is supported by the rapid growth of military research and development during this period, as well as other weapons-related factors, discussed below.

There are indications that the Soviets are now placing more of a premium than was evident in the past on weapons which require more complex technology. This has led to some divergence from the previous pattern of development practices, which include:

Adherence to strict industrial procedures, with little or no innovation; use of off-the-shelf components; and employment of proven design and manufacturing methods.

At the same time, the Soviets appear to be moving away from single-purpose system design concepts. For example, the practice in the 1960's and 1970's of producing mission-unique aircraft designs for their counter-air, ground attack, and interceptor roles may have ended with the appearance of the Flogger series in the 1970's.

Flogger variants appeared which were optimized for a variety of roles and reflect a possible shift toward multirole fighter design. The new Flanker fighter aircraft is expected to follow this same pattern.

The new SA-10 surface-to-air missile also appears to be designed for a multimission role with some capability against both aircraft and cruise missiles at all altitudes.

The Soviets had already achieved the capability to manufacture weaponry in large numbers, so that they were in an excellent position to stress the production of the highest quality equipment.

In recognition of the newer, technologically advanced weapons, there may have been a deliberate slowing to allow for the military reorganization that substantially changed much of the structure of the military forces in the late 1970's and early 1980's.

This discussion of possible factors affecting the growth in procurement is not meant to be totally inclusive. We believe, however, that technological reasons are the single best explanation for the slowing in the expansion of procurement during the 1976–82 period.

We believe this is so because of the technological factors summarized here. There may well have been many other factors. We believe, however, that the above list represents the most likely set of possibilities.

TRENDS, 1983–84

The years 1983 and 1984 marked an upturn in the performance of the economy as a whole which allowed for even greater growth in the military sector. Part of the improvement is due to increased productivity of both captial and labor.

There has been improvement in the rate of construction completions and in bringing new productive capacity on line. New plant and equipment production starts increased by about 5 percent in 1982 and by another 5 percent in 1983, up sharply from the rates at which gross capacity had increased in the late 1970's.

This improvement was aided by increase in the share of capital investment going to construction and installation work. Total labor productivity in 1983 increased over 1982, the result of the labor discipline campaign begun by Andropov and continued by Chernenko.

In addition, there are signs that the new economic experiment initiated in January 1984 and designed to link wages to a plant's final performance is improving morale and thus productivity. The experiment started out with five ministries involving a few hundred enterprises. The results have been so successful that the Soviets are expanding the experiment to cover 21 more ministries and several thousand enterprises.

Improvements in both the agricultural and transportation sectors probably contributed to increased economic growth as well. Improvement in the food situation helped both in the area of labor productivity and the transportation sector. In 1983, the railroads were able to handle 150 billion ton/kilometers of freight more than in 1982.

Again, industry was the leading growth sector of the economy. Industrial output as a whole increased by 3.2 percent in 1982 and by 4 percent in 1983. Early figures for 1984 indicate that total industrial production was about 4 percent higher than in 1983.

The fastest-growing sector of industry continues to be the machinery-producing branch, which registered a 6-percent growth rate in 1983 and an even better 7-percent increase in 1984.

In 1983, the output of the military ministries grew at [security deletion] percent compared with [security deletion] percent for the civilian ministries, and in the first half of 1984, they increased by [security deletion] percent, while the civilian ministries grew at less than [security deletion] percent.

As an additional indicator of the effort dedicated to military production, the allocation of labor to the military machinery ministries between 1981 and 1984 grew at an average annual rate of about [security deletion] percent, compared to [security deletion] growth in the civilian machinery ministries.

Shown here are the results of the growth of military industry. The next few slides show the production of military materiel by major category. The physical production data reflect relatively small changes over last year.

Again, it is emphasized that there is a continuing shift toward the production of more complex and more expensive weapons, with the concomitant phaseout of the earlier generation models.

Senator PROXMIRE. General, why don't we have figures for 5 years instead of 3?

General BISSELL. We can provide those for you, sir. It is just a matter of designing the slides. We will be pleased to do that.

Senator PROXMIRE. We would appreciate that.

[The following information was subsequently supplied for the record:]

5-YEAR PRODUCTION DATA

LAND ARMS PRODUCTION

Category	1980	1981	1982	1983	1984
Medium and main battle tanks					
Infantry combat vehicles					
Armored personnel carriers					
Armored recce vehicles					
Self-propelled field arty (> 100mm):					
Towed field arty (< 100mm)			[Security deletion.]		
Towed field arty (> 100mm)					
Artillery-type rocket launchers					
Artillery-type mortars:					
Small caliber mortars					
Recoilless weapons					

LAND ARMS PRODUCTION—Continued

Category	1980	1981	1982	1983	1984
Self-propelled antiaircraft artillery			[Security deletion.]		

AIRCRAFT PRODUCTION

Category	1980	1981	1982	1983	1984
Long-range bombers					
Fighters/fighter-bombers					
Combat capable trainers					
Non-combat capable trainers					
ASW aircraft			[Security deletion.]		
AWACS					
Military and civilian helicopters					
Military and civilian transports					
Tanker aircraft					

NAVAL PRODUCTION

Category	1980	1981	1982	1983	1984
Ballistic missile submarines					
General purpose/attack submarines					
Other submarines					
Major surface combatants					
			[Security deletion.]		
Minor surface combatants					
Naval support ships					
Naval service craft					

MISSILE PRODUCTION

Category	1980	1981	1982	1983	1984
ICBMS's					
Non-stragetic IRBM's					
SRBM's					
SLBM's					
Anti-ship cruise missiles			[Security deletion.]		
Surface-to-air missiles (thousands)					
Tactical air-surface missiles					
Anti-tank guided missiles (thousands)					

General BISSELL. Much of the increased expenditure on research and development by the Soviet military during the past decade is paying off. Shown here are some examples of advanced weapon systems well into series production.

Even as the level of research and development has increased in the 1980's, we are seeing the continued introduction of new weapon

systems. The examples shown here have all been introduced within the past 2 years.

Shown here are some examples of new weapon systems currently being produced for the military, as compared with the older systems being phased out over the next several years.

In every case, the new weapon is substantially improved in combat capabilities, more sophisticated, more complex, and as a result, more costly to develop and produce.

As a result, Soviet military procurement costs, at least for their major weapon systems, will continue to rise in the future. It is therefore not surprising that the procurement cost, measured in dollar terms, for major Soviet weaponry has increased sharply in both 1983 and 1984.

In mid-1984, we published an estimate of the dollar cost of major Soviet weaponry for 1983, which reflected substantial growth over 1982, which was the latest of several years during which the DIA dollar measure of procurement showed little or no growth.

Our analysis is based on the production of over 200 weapon systems, for which we have high confidence in our estimates, and represents more than half of estimated total procurement. Based on the now-completed estimates of major weapon systems production in 1984 and revisions of the earlier years' data, we now have a preliminary estimate that the 1984 value of procurement for these major systems is about [security deletion] percent above 1983.

This year, the growth was driven by a large increase in the procurement costs of [security deletion] where last year naval systems showed the most rapid growth.

Because the military's growth has been at rates consistently higher than the economy's, we believe that the share of the nation's resources devoted to the military has increased to some 15–17 percent of GNP, up from 14–16 percent of GNP at the start of the 1980's.

In conclusion, there is no evidence of a shift in priority from party support of national military objectives. Despite continued public support for economic programs designed to improve both the economy's efficiency and the consumer's welfare, the changes that have been observed are all within the framework of tight central planning, Soviet style.

These changes represent carefully controlled infusions of management and resources to specific chokepoints to improve performance without major structural change. The various consumer-oriented programs closely adhere to conservative principles of the current leadership, and show little evidence of either conflicting with Soviet orthodoxy or providing new avenues for strong economic growth. As a result, the military sector continues to be the strongest and the most viable part of the Soviet economy.

Thank you very much, gentlemen. This concludes my presentation.

[The slide presentation of General Bissell follows:]

DEFENSE INTELLIGENCE AGENCY
UNITED STATES OF AMERICA

D.I.A. TESTIMONY
BEFORE THE
SUBCOMMITTEE ON INTERNATIONAL TRADE, FINANCE AND SECURITY ECONOMICS
OF THE
JOINT ECONOMIC COMMITTEE

ALLOCATION OF RESOURCES IN THE SOVIET UNION 1984

KEY FINDINGS

- MILITARY'S SHARE OF GNP INCREASED TO 15-17%

- DOLLAR COSTS OF MAJOR WEAPONS PROCUREMENT UP IN 1983 AND 1984

THE SOVIET UNION'S MILITARY ECONOMY

- CONTINUING SOVIET MILITARY GROWTH
- FORCE MODERNIZATION
- MILITARY PRODUCTION - THE ECONOMY'S HIGHEST PRIORITY

THE SOVIET UNION'S MILITARY ECONOMY

- UNCERTAINTIES IN THE ECONOMIC ESTIMATES
- 1965-1975: A PERIOD OF RAPID GROWTH
- 1976-1982: A SLOWER RATE OF EXPANSION
- 1983-1984: A RETURN TO HISTORICAL RATES

THE SOVIET VIEW

- RESOURCE ALLOCATION
- MILITARY AND ECONOMIC GROWTH

- USE OF SOVIET STATISTICS
- CONVENTIONAL INTELLIGENCE SOURCES AND METHODS

THE FULL COST OF DEFENSE

- CURRENT MEASURE 15-17% OF GNP
- EXCLUDES COSTS OF MILITARY-RELATED PRACTICES AND ACTIVITIES:
  - PREFERENTIAL RESOURCE FLOWS TO MILITARY
  - SUBSIDIES FROM CIVILIAN SECTORS

RUBLE ESTIMATE

- CURRENT RUBLE TERMS
- MAY BE DISTORTED BY INFLATION

MEASURES OF THE SOVIET MILITARY PROGRAM

RUBLES - MEASURE THE PROGRAM FROM THE SOVIET PERSPECTIVE

DOLLARS - MEASURE THE U.S. COSTS OF REPRODUCING THE SOVIET PROGRAM

DOLLAR MEASURES OF THE SOVIET MILITARY PROGRAM

- UNCERTAINTIES
  - LARGE NUMBER OF INDIVIDUAL ESTIMATES
  - OBSERVATION VS JUDGMENT
- OUTPUT VS INPUT
- DEFINITION OF "DEFENSE"

COMPOSITION OF DOLLAR COSTS

INCLUDES

- DoD
  - INVESTMENT
    - PROCUREMENT
    - CONSTRUCTION
  - OPERATING
    - PERSONNEL
    - O&M
  - R&D
- DoE
  - MILITARY NUCLEAR PROGRAMS
- SELECTIVE SERVICE
- COAST GUARD (MILITARY RELATED)

EXCLUDES

- MILITARY PLANT
  - CONSTRUCTION
  - EQUIPMENT
- ECONOMIC INFRASTRUCTURE
  - RAILROAD LINES
  - UTILITIES
- PURCHASED TECHNOLOGY
- MILITARY ASSISTANCE
- CIVIL DEFENSE
- CIVIL SPACE
- INTERNAL SECURITY TROOPS
- CONSTRUCTION TROOPS
- RETIREMENT PAY
- VETERANS PROGRAMS

COSTING NEW WEAPONS

- SOVIET DIFFICULTIES WITH NEW TECHNOLOGY:
  - IN THE WEAPON SYSTEMS
  - IN THE PRODUCTION PROCESS

- DOLLAR COST REFLECTS U.S. EXPERIENCE

MILITARY MACHINERY MINISTRIES

MINISTRY OF:

- AVIATION INDUSTRY
- COMMUNICATIONS EQUIPMENT
- DEFENSE INDUSTRY
- ELECTRONICS
- GENERAL MACHINE BUILDING
- MACHINE BUILDING
- MEDIUM MACHINE BUILDING
- RADIO INDUSTRY
- SHIPBUILDING INDUSTRY

SAMPLE OF EQUIPMENT PRODUCED

1965-1975
INCREASED MILITARY SPENDING
RESULTS:

- FORCE EXPANSION
- WEAPONS IMPROVEMENT

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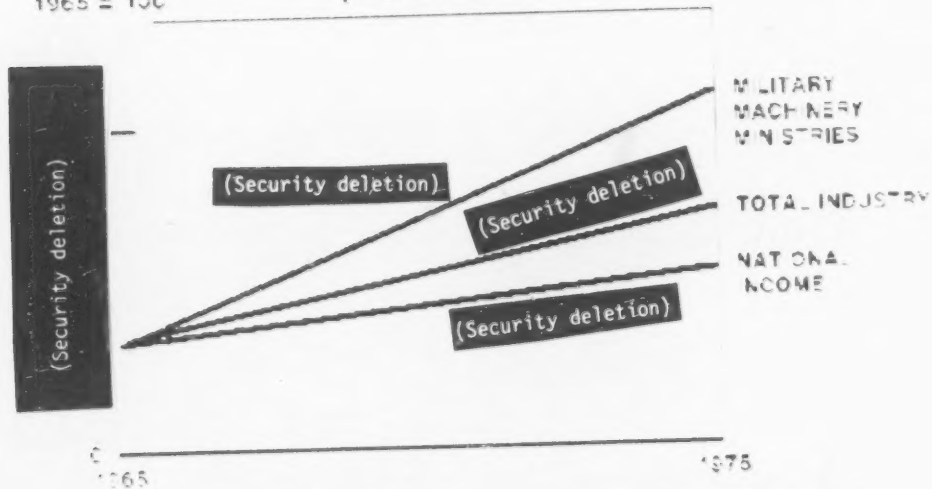
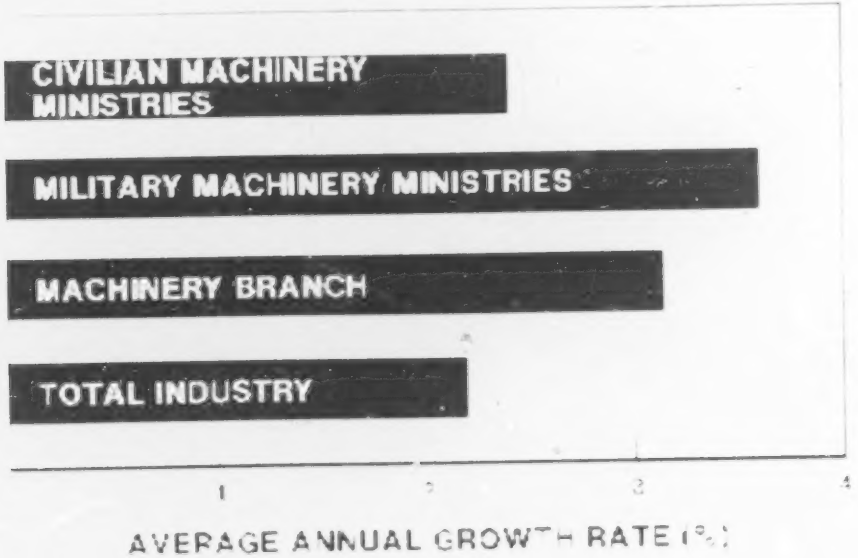
NATIONAL INCOME. TOTAL INDUSTRY AND MILITARY MACHINERY MINISTRIES (1965 = 100)



PERCENTAGES ARE AVERAGE ANNUAL GROWTH

LABOR FORCE GROWTH RATES, 1965-1975



KEY NON-FERROUS METALS PRODUCTI
(IN METRIC TONS)

	1965	1975
• ALUMINUM	1,100,000	2,200,000
• BERYLLIUM	(Security deletion)	
• COBALT	4,000	6,600
• TITANIUM	20,000	50,000
• TUNGSTEN	6,800	8,100
• URANIUM	(Security deletion)	

*NO DATA AVAILABLE

SELECTED WEAPONS PRODUCTION, 1965-1975
CUMULATIVE TOTALS

TYPE OF WEAPON	NUMBER
MEDIUM & MAIN BATTLE TANKS	[redacted]
ARMORED PERSONNEL CARRIERS	
FIGHTERS/FIGHTER BOMBERS	
LONG-RANGE BOMBERS	
MAJOR SURFACE COMBATANTS	
BALLISTIC MISSILE SUBMARINES	
ICBMs	

(Security deletion)

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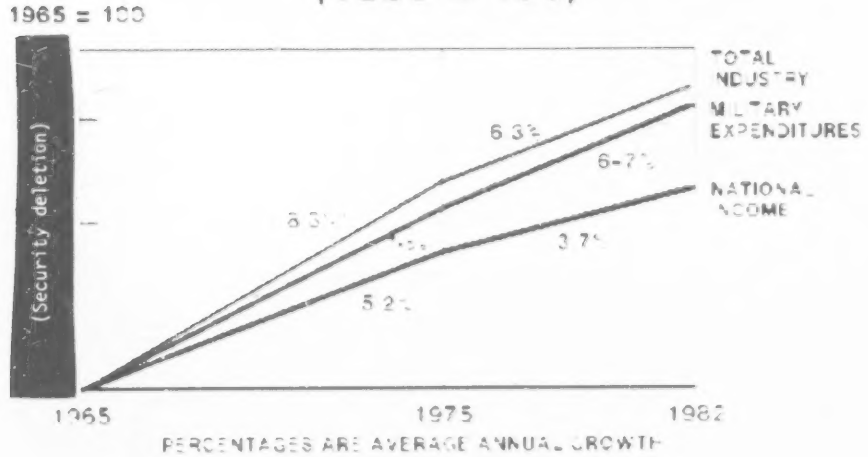
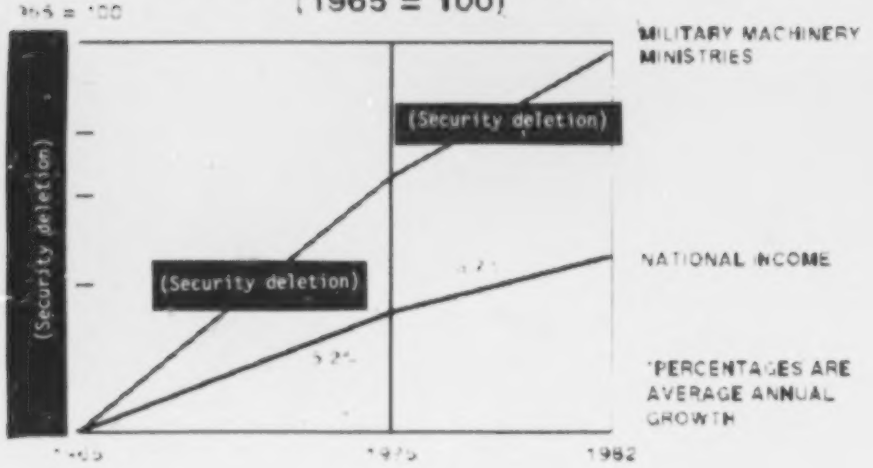
NATIONAL INCOME, TOTAL INDUSTRY AND MILITARY EXPENDITURES (1965 = 100)



PERCENTAGES ARE AVERAGE ANNUAL GROWTH

NATIONAL INCOME AND MILITARY MACHINERY MINISTRIES (1965 = 100)



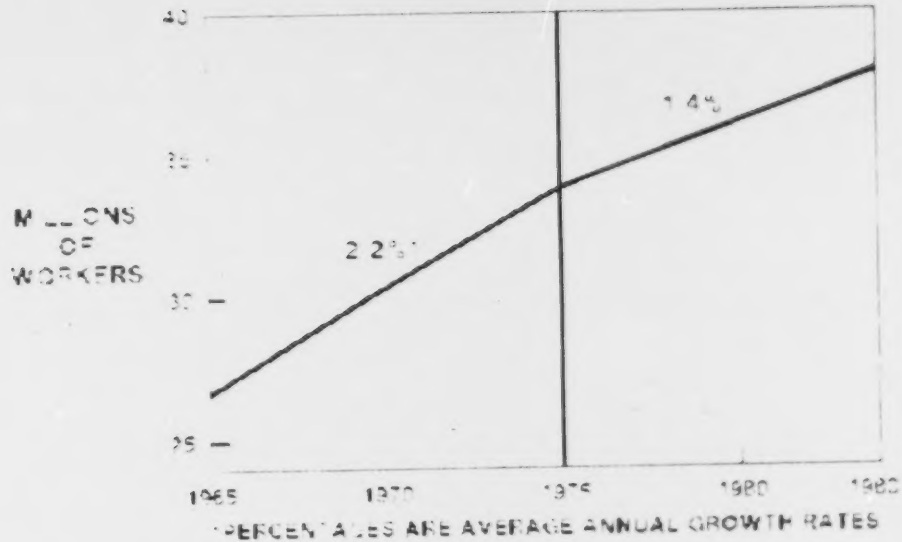
FACTORS BEHIND SLOWER GROWTH

- AVAILABILITY OF PRODUCTION INPUTS
- PRODUCTIVITY
- SECTORAL DIFFICULTIES
- SYSTEMIC PROBLEMS

INCREASED SCARCITY/COSTS OF PRODUCTION INPUTS

- NATURAL RESOURCES
- LABOR
- CAPITAL

INDUSTRIAL LABOR FORCE



*PERCENTAGES ARE AVERAGE ANNUAL GROWTH RATES

ECONOMIC GROWTH STRATEGY

- HISTORICALLY, LARGER INPUTS OF MATERIALS, MANPOWER AND CAPITAL RESOURCES

- NOW, TRY FOR MORE EFFICIENT USE OF RESOURCES

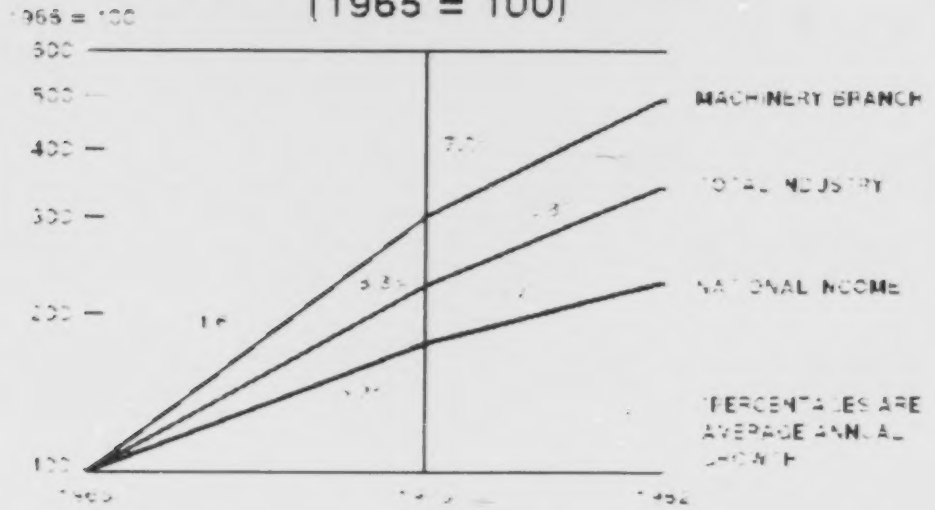
SECTORAL DIFFICULTIES

- AGRICULTURE
  - SMALLER PER CAPITA OUTPUT
- TRANSPORTATION
  - BOTTLENECKS
  - INCREASED DEMAND

SYSTEMIC PROBLEMS

- CENTRALIZATION/PLANNING
- MANAGERIAL DISINCENTIVES

NATIONAL INCOME, TOTAL INDUSTRY AND MACHINERY BRANCH (1965 = 100)



MACHINERY BRANCH (Security deletion)
MACHINERY MINISTRIES
(1965 = 100)
(Security deletion)
(Security deletion)
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(Security deletion)
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(Security deletion)
(Security deletion)
(Security deletion)
(Security deletion)
MACHINERY BRANCH
(Security deletion)
(Security deletion)
(Security deletion)
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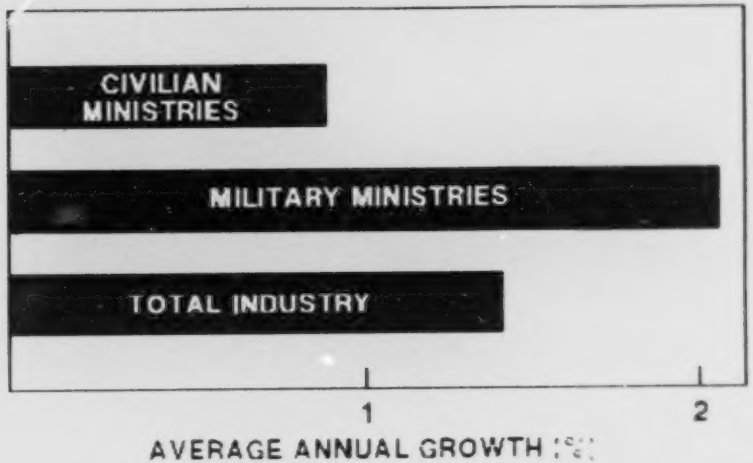
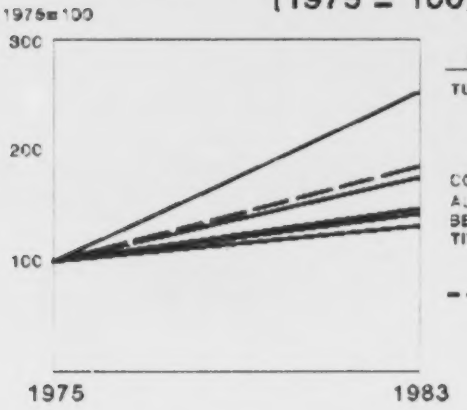
PERCENTAGES ARE AVERAGE ANNUAL GROWTH
1965
1975
1982

INDUSTRIAL LABOR FORCE, 1976-1982



GROWTH OF MILITARY MINISTRIES AND STRATEGIC NONFERROUS METALS (1975 = 100)



METAL	AVERAGE ANNUAL GROWTH RATE	SHARE OF OUTPUT USED
TUNGSTEN	12.3	>95%
COBALT	7.3	80%
ALUMINUM	4.8	40%
BERYLLIUM	4.6	35-90%
TITANIUM	3.5	50%

– – – – MILITARY MACHINERY MINISTRIES

KEY NON-FERROUS METALS PRODUCTION
(IN METRIC TONS)

	1965	1975	1983
• ALUMINUM	1.100.000	2.200,000	3.190.000
• BERYLLIUM	[redacted] (Security deletion)		
• COBALT	4.000	6.600	[redacted] (Security deletion)
• TITANIUM	20.000	50.000	66.000
• TUNGSTEN	6,800	8.100	[redacted] (Security deletion)
• URANIUM	[redacted] (Security deletion)		

*NO DATA AVAILABLE

MAJOR RESEARCH AND DEVELOPMENT DURING THE PAST DECADE

- 40 AERODYNAMIC SYSTEM DEVELOPMENTS
  INCLUDING: FIGHTERS
  BOMBERS
  HELICOPTERS

- 60 SHIPBUILDING SYSTEM DEVELOPMENTS
  INCLUDING: SUBMARINES
  SURFACE COMBATANTS
  HIGH-PERFORMANCE CRAFT

MAJOR RESEARCH AND DEVELOPMENT DURING THE PAST DECADE (Cont'd)

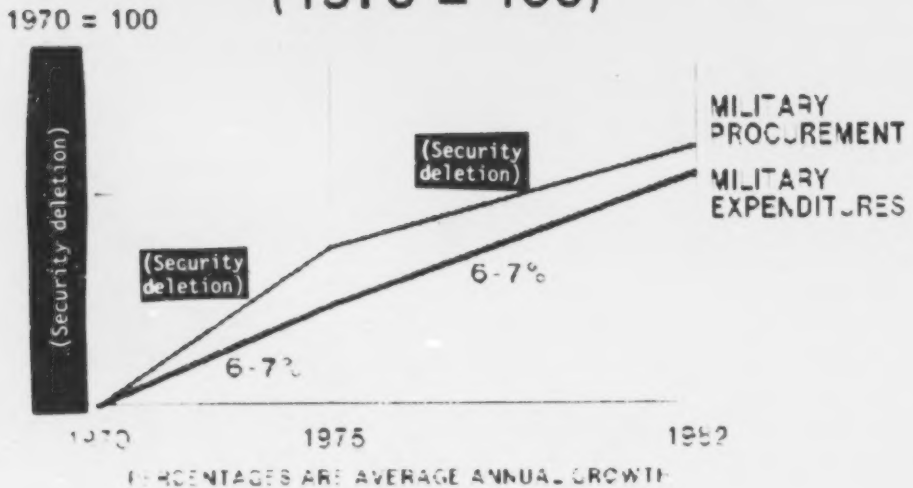
- 50 MISSILE AND SPACE SYSTEM DEVELOPMENTS
  INCLUDING:
  - BALLISTIC MISSILES
  - SPACE LAUNCH VEHICLES
  - SPACECRAFT

- 45 GROUND FORCE DEVELOPMENTS
  INCLUDING:
  - ARTILLERY
  - TANKS
  - INFANTRY COMBAT VEHICLES
  - ANTIAIRCRAFT ARTILLERY SYSTEMS
  - ANTITANK GUIDED MISSILES
  - SMALL ARMS

SOVIET MILITARY R&D

- (Security deletion) RESEARCH FACILITIES
- PHYSICAL EXPANSION - 3% PER YEAR GROWTH
- BEST SCIENTISTS & ENGINEERS
- (Security deletion)
- MANPOWER - (Security deletion) PER YEAR

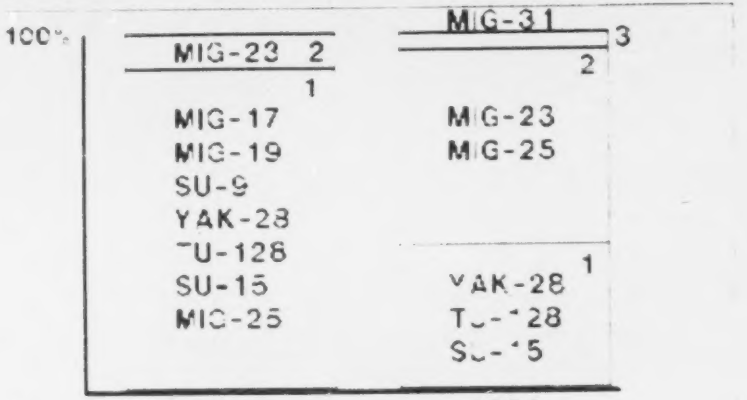
MILITARY PROCUREMENT & MILITARY EXPENDITURES (1970 = 100)



MAJOR NAVAL IMPROVEMENTS

- SSBNs
  - FOUR NEW CATEGORIES, INCLUDING:
    - TYPHOON (SS-N-20)
    - DELTA III (SS-N-18)
- SURFACE SHIPS
  - (Security deletion) NEW CATEGORIES, INCLUDING:
    - KIEV (CVHG) - EQUIPPED WITH FORGER AIRCRAFT
    - SLAVA (CG) - CRUISE MISSILES AND SAMs
- GENERAL PURPOSE SUBMARINES
  - FOUR NEW CLASSES, INCLUDING:
    - [illegible] - 300 NM CRUISE MISSILE
    - ALFA - 40 KNOTS SUSTAINED SPEED

INTERCEPTOR RADAR CAPABILITY



1 RANGE ONLY RADAR
2 LIMITED LOOKDOWN
3 TRUE LOOKDOWN/SHOOTDOWN

BACKFIRE BOMBER

(Security deletion)

GROUND FORCES

- NEW SYSTEMS
- LARGER, MORE HEAVILY ARMED UNITS
- GREATER FIREPOWER AND MOBILITY
  - NUCLEAR CAPABLE ARTILLERY
- LARGE SCALE, FAST MOVING COMBAT OPERATIONS

LAND BASED STRATEGIC MISSILES

SS-18, MOD 2 — 8-10 MIRV
SS-18, MOD 4 — 10 MIRV
SS-19, MOD 3 — 6 MIRV

SS-20 — 3 MIRV
MOBILE
5000 KM RANGE

POSSIBLE FACTORS

- TRANSPORTATION AND DISTRIBUTION PROBLEMS
- TECHNOLOGICAL PROBLEMS
- WEAPONS CYCLE
- POLICY DECISIONS

POSSIBLE CONSIDERATIONS

- STRENGTHEN INDUSTRIAL INFRASTRUCTURE FOR FASTER FUTURE GROWTH
- MODIFY BASIC PROCUREMENT POLICY
- PLACE GREATER EMPHASIS ON R&D

SLOWER PROCUREMENT GROWTH DURING 1976-1982 POSSIBLY DUE TO:

- DELAY OF NEW SYSTEMS INTRODUCTIONS TO ASSURE INCLUSION OF LATEST TECHNOLOGY

- PHASE-OUT OF OLDER WEAPONRY

POSSIBLE TECHNOLOGICAL FACTORS

- DIVERGENCE FROM OLD PATTERN OF DEVELOPMENT PRACTICES
- NEW EMPHASIS ON MULTI-MISSION WEAPONS SYSTEMS
- INCREASED EMPHASIS ON QUALITY
- LARGE-SCALE MILITARY REORGANIZATION

TECHNOLOGICAL FACTORS IMPACTING ON PROCUREMENT

- DESIRE TO USE NEWEST TECHNOLOGY
- RAPID GROWTH OF MILITARY R&D
- EMPHASIS ON HIGHEST QUALITY WEAPONS
- LONGER DEVELOPMENT. PRODUCTION TIMES
- MULTI-ROLE WEAPONS DESIGN
- MILITARY REORGANIZATION

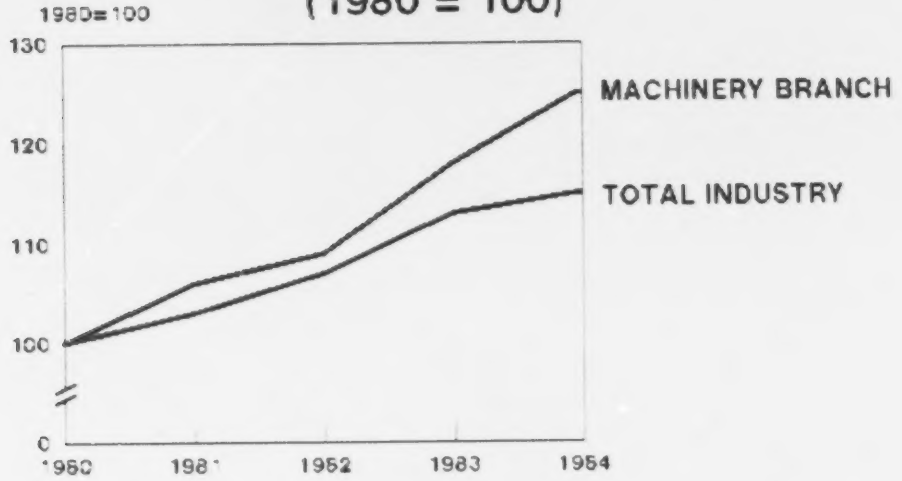
1983 AND 1984: INCREASED PRODUCTIVITY

- CAPITAL
  - MORE CONSTRUCTION COMPLETIONS
  - INCREASE IN NEW PLANT STARTS
- LABOR
  - 1983 PRODUCTIVITY UP 3.5% OVER 1982
  - NEW INDUSTRIAL ECONOMIC EXPERIMENT
    - SMALL-SCALE START IN 1984
    - MAJOR EXPANSION IN 1985

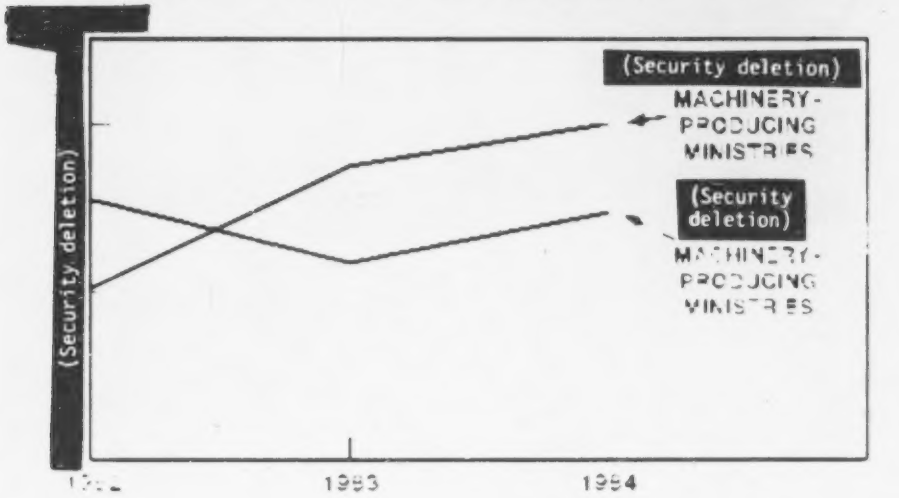
SOVIET AGRICULTURE AND TRANSPORTATION SECTORS, 1980-83

	1980	1981	1982	1983
RAIL FREIGHT TURNOVER (BILLION TON/KILOMETERS)	3.440	3.500	3.450	3.600
GRAIN PRODUCTION (MILLION METRIC TONS)	190	158	165	190
GRAIN IMPORTS (MILLION METRIC TONS)	35	45	33	35

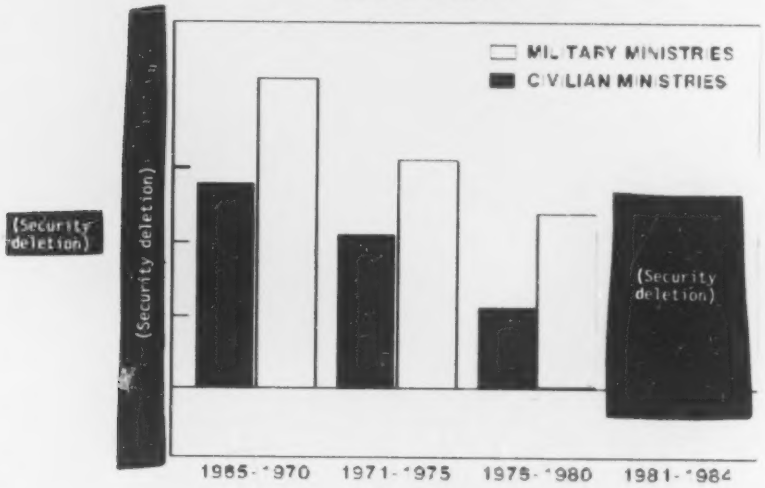
TOTAL INDUSTRY AND MACHINERY BRANCH OUTPUT (1980 = 100)



OUTPUT GROWTH OF (Security deletion) MACHINERY-PRODUCING MINISTRIES



COMPARISON OF LABOR FORCE GROWTH RATE TRENDS IN MILITARY AND CIVILIAN MACHINERY MINISTRIES



LAND ARMS PRODUCTION

CATEGORY	1982	1983	1984
• MEDIUM & MAIN BATTLE TANKS	(Security deletion)		
• INFANTRY COMBAT VEHICLES			
• ARMORED PERSONNEL CARRIERS			
• ARMORED RECCE VEHICLES			
• SELF-PROPELLED FIELD ARTY (> 100mm)			
• TOWED FIELD ARTY (> 100mm)			
• TOWED FIELD ARTY (< 100mm)			
• ARTILLERY-TYPE ROCKET LAUNCHERS			
• ARTILLERY-TYPE MORTARS			
• SMALL CALIBER MORTARS			
• RECOILLESS WEAPONS			
• SELF-PROPELLED ANTI-AIRCRAFT ARTILLERY			

NAVAL PRODUCTION

CATEGORY	1982	1983	1984
• BALLISTIC MISSILE SUBMARINES			
• GENERAL PURPOSE/ATTACK SUBMARINES			
• OTHER SUBMARINES			
• MAJOR SURFACE COMBATANTS			
• MINOR SURFACE COMBATANTS			
• NAVAL SUPPORT SHIPS			
• NAVAL SERVICE CRAFT			

AIRCRAFT PRODUCTION

CATEGORY	1982	1983	1984
• LONG-RANGE BOMBERS			
• FIGHTERS/FIGHTER-BOMBERS			
• COMBAT CAPABLE TRAINERS			
• NON-COMBAT CAPABLE TRAINERS			
• ASW AIRCRAFT			
• AWACS			
• MILITARY & CIVILIAN HELICOPTERS			
• MILITARY & CIVILIAN TRANSPORTS			
• TANKER AIRCRAFT			

MISSILE PRODUCTION

CATEGORY	1982	1983	1984
• ICBMs			
• NON-STRATEGIC IRBMs			
• SRBMs			
• SLBMs			
• ANTI-SHIP CRUISE MISSILES			
• SURFACE-TO-AIR MISSILES (THOUSANDS)			
• TACTICAL AIR-SURFACE MISSILES			
• ANTI-TANK GUIDED MISSILES (THOUSANDS)			

INDICATORS OF SOVIET MILITARY GROWTH

- INCREASING NUMBER OF MAJOR WEAPONS SYSTEMS
  - MIG-31 FOXHOUND INTERCEPTOR
  - SU-25 FROGFOOT GROUND ATTACK AIRCRAFT
  - BEAR H BOMBER
  - MIKE SSN SUBMARINE
  - UDALOY DDG SURFACE COMBATANT
  - TYPHOON SSBN
  - SS-N-21 SEA-LAUNCHED CRUISE MISSILE

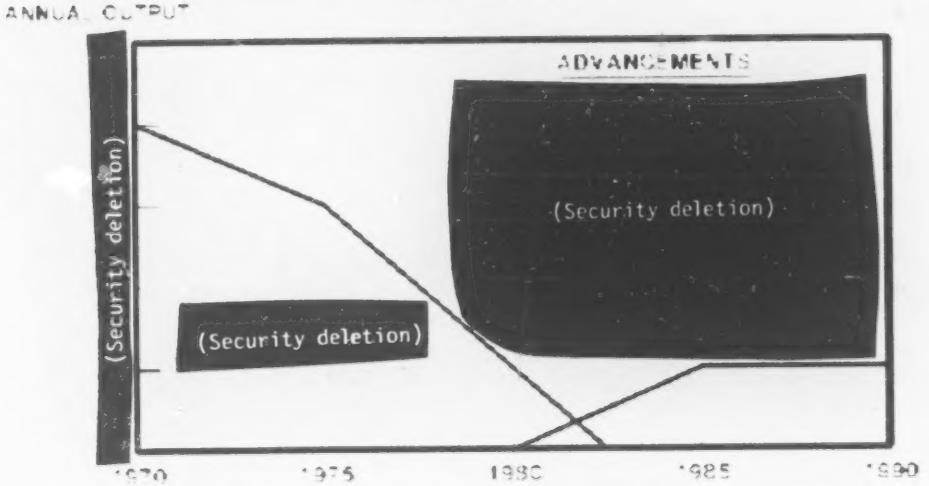
INDICATORS OF SOVIET MILITARY GROWTH (Cont'd)

- SERIES PRODUCTION BEGINNING ON SYSTEMS

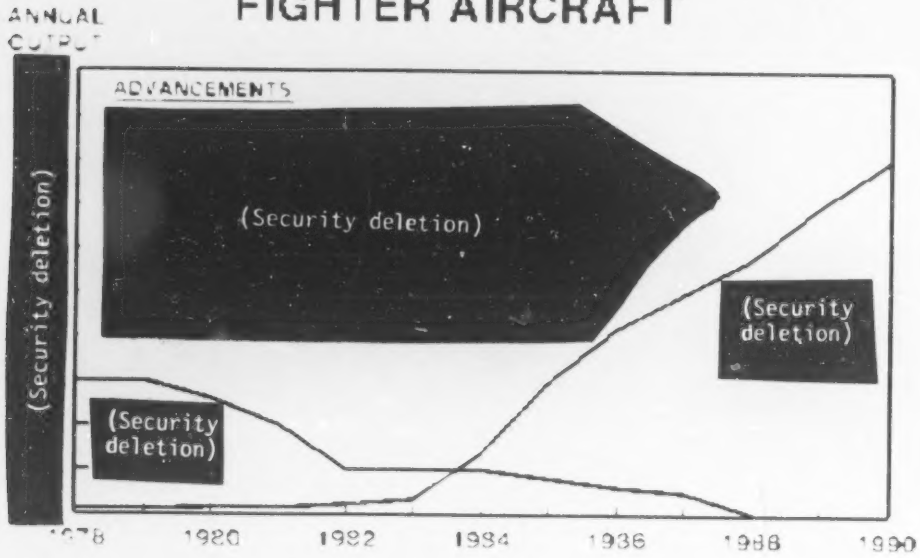
- INCREASINGLY HIGHER COSTS FOR THESE WEAPONS SYSTEMS

WEAPON SYSTEM PRODUCTION: TANKS

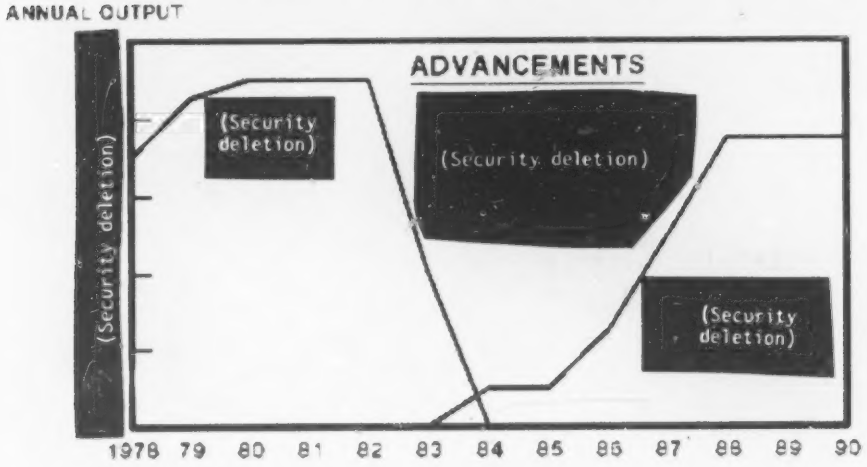
WEAPON SYSTEM PRODUCTION: SSBNs



WEAPON SYSTEM PRODUCTION: FIGHTER AIRCRAFT



WEAPON SYSTEM PRODUCTION: SURFACE-TO-SURFACE MISSILES



Senator PROXMIRE. Thank you very much, General. We are delighted to have Senator Symms join us. He is a member of the committee and as you know is extremely interested in these matters, and has been a leader on the floor in discussing and debating them. He brings a great deal of competence to this hearing today.

We are happy to have you here.

Senator SYMMS. Thank you.

Senator PROXMIRE. Also I have asked, Senator Symms, that Dick Kaufman, who is the committee's general counsel and has done a great deal of work in this area, take part in the questioning.

ARTICLE BY RICHARD KAUFMAN

I would like to ask you, General, if you would, for the benefit of the committee—I don't want you to hold anything up on this, and it may be this would come in after you sanitize the hearings—but Mr. Kaufman has written a very interesting article that appeared in the Soviet Economy, published by the Joint Committee on Soviet Studies of the American Council of Learned Societies and the Social Science Research Council. This appeared in the January issue. You were given a draft of this I understand in November, your agency was, and also a copy of the article last Friday.

Now, the advantage of this is there are comments in here by other distinguished scholars evaluating, criticizing the Kaufman article. I think it would be an extraordinarily useful thing if you, your organization, would give us your own reaction to it and your own criticism of it.

It differs, it disagrees with some of the conclusions that you have reached. It would be very helpful I think to the committee to get your rebuttal or your concurrence, whatever, on this, because we want to get the most accurate and truthful picture that we possibly can. I know that is what you want, too.

General BISSELL. We will be happy to review and comment on that, sir.

Senator PROXMIRE. Very good.

[The article referred to by Senator Proxmire and the DIA's comments on it follow:]

SOVIET ECONOMY

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Managing Co-Editor
Ed A. Hewett
The Brookings Institution

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Causes of the Slowdown in Soviet Defense

Richard F. Kaufman[1]

Abstract: This paper discusses the recent official U.S. intelligence estimates indicating a slowdown in the growth rates of Soviet defense spending and military procurement since 1976. The Central Intelligence Agency's explanation for the slowdown is examined. Questions are raised about two of the factors, economic constraints and technical difficulties, and the implications of the CIA's explanation for theories about the relationship of the defense sector to the rest of the economy are considered. The author offers as a possible alternative explanation of the slowdown a change in Soviet military investment priorities deemphasizing strategic offensive weapons. *Journal of Economic Literature*, Classification Numbers: 052, 114, 124.

INTRODUCTION

In 1983, the Central Intelligence Agency (CIA) revised its estimates for Soviet military spending during 1977–1981.[2] Previously, the CIA had estimated that since 1965 Soviet military spending had been growing by 3 percent annually when measured in constant dollars and 4–5 percent in constant rubles. The revised estimates indicate that during 1966–1976 total defense costs grew at about the same rates reported earlier, but that since 1976 growth slowed to about 2 percent a year measured in rubles and to slightly less than 2 percent in dollars. At the time of this writing, estimates were not available for the years subsequent to 1981, although there is reason to believe that the slower growth continued through at least 1982.

The slowdown in defense cost growth rates was distributed unevenly among the various categories of defense. During 1977–1981, operations and maintenance costs grew by 3–4 percent a year and personnel costs grew at about a 2 percent rate, but procurement of military hardware grew only slightly during the period when measured in rubles and did not grow at all in dollars. Military investment (defined as procurement, military construction, and military research, development, testing and

[1]Assistant Director, Joint Economic Committee (JEC), U.S. Congress. The views expressed are those of the author and not necessarily those of the Joint Economic Committee. The author wishes to thank Ed A. Hewett and Hans Heymann for reading an earlier draft of this paper and providing many helpful comments and suggestions.

[2]There is an important difference between defense *costs* and defense *expenditures*. The Soviet Union publishes only a single line entry for defense in the state budget. This figure is considered uninformative because its scope is not defined and changes in the announced figure do not correspond with changes in the observed level of military activities. The CIA estimates Soviet defense costs by listing the activities and physical components of the Soviet defense program for a given year and converting them into dollar and ruble values. Although the CIA refers to its "spending" estimates, actual Soviet defense expenditures are a secret known with high confidence only to the Soviets. There are methodologies that attempt to measure Soviet defense expenditures, but they have wide margins of error. See Footnote 4.

Soviet Economy, 1985, 1, 1, pp. 9–31.
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engineering (RDT&E)) grew at an agerage annual rate of 2-3 percent in dollars, suggesting the RDT&E component grew substantially faster than that.[3] The new estimates also revised the figures for the defense share of GNP—a measure of the military burden. It was previously believed that the defense share of GNP increased from 12-13 percent in 1970-1978 to 13-14 percent in 1979-1981. The present view is that the share was 13-14 percent in 1970-1978 and remained unchanged in 1979-1981.[4]

EARLIER ESTIMATES AND THE DECISION TO REVISE

Prior to 1983, there was a strong concensus in the intelligence community that Soviet defense spending had grown at an average annual rate of 3-5 percent and would continue to grow at that rate because of the high priority the Soviets place on military force. This view was seemingly strengthened when the CIA revised upward its estimates of Soviet defense costs in 1976. In that revision, the estimated level of spending in rubles was sharply increased, the annual rate of increases in spending was raised from 3 percent to 4-5 percent, and the estimated military burden on the economy was doubled from 6-8 percent to 12-13 percent of GNP. The 1976 revisions were based on price adjustments made when it was learned that military hardware was much more costly to the Soviets than was previously understood in the West.

The revisions were characterized as a demonstration that "the Soviets are far more willing than we had thought to forego growth in the civilian sector (and consumer satisfaction) in favor of expanding military capabilities." Further, it was stated that the leadership's concerns about the effects of defense spending on the economy had not prevented steady increases in military spending during periods of economic setbacks (JEC, 1976, p. 66).

In 1976, it was expected that there would be a short-term downturn in defense spending caused by the cyclical nature of the procurement pattern, to be followed in a year or two by an upturn as new strategic weapons came on line. Such cycles had occurred before. In 1970, there had been a one-year decline in Soviet investment expenditures; growth resumed in 1971 and reached an average annual rate of more than 5 percent during 1971-1975. It was thus viewed as normal when the annual

[3]The Department of Defense reports that Soviet RDT&E has been increasing in real terms at an average annual rate of about 7 percent for the past 20 years (DOD, *FY 1985 Program*, 1984, p. II-10).

[4]The Defense Intelligence Agency (DIA), using a methodology that attempts to measure Soviet defense expenditures in current rubles, concludes that the rates of growth slowed, but by less than is found with the building-block methodology. For a discussion of methodological issues, see Kaufman, 1984. Defense Secretary Caspar W. Weinberger has stated that "the most recent trends are grounds for some encouragement but they do not provide any basis for diminishing our own efforts." Department of Defense (DOD) letter to Rep. Lee H. Hamilton, January 13, 1984. In his 1984 annual report, Secretary Weinberger states, "There are some signs that Soviet military investment may have grown less rapidly over the last few years than it had earlier. . . ." (DOD, *Annual Report*, 1984, p. 20.)

growth of defense outlays slowed down to about 2 percent in 1977–1978 (JEC, 1976, p. 23; JEC, 1980, p. 22).

During a 1979 congressional hearing, an exchange took place over this point between Senator William Proxmire and Donald Burton of the CIA's Office of Strategic Research (JEC, 1980, pp. 22–23):

> Sen. Proxmire. I understand that the Soviet defense costs, as measured in U.S. dollars—and correct me if I am wrong in these percentages—increased 2 to 2.5 percent in 1977 and 1.5 in 1978. If those figures are correct, how can we be sure that their budget will increase at or near the long-term average rate in the next four years or next decade?
>
> Mr. Burton. Soviet defense spending has not grown at a constant 4 to 5 percent rate of growth through time.
>
> Sen. Proxmire. Are the figures I gave correct?
>
> Mr. Burton. They are. The 1977 period is a period where they are between programs. The new programs that come on in 1979 and 1980 will, we believe, move the rate of growth back up again.
>
> . . .
>
> Sen. Proxmire. If the fluctuations in the five-year planned spending increase on the basis of the procurement cycle, how is it possible for the fluctuations in the procurement cycle to have such large effects on weapons spending? Do they always fluctuate together?
>
> Mr. Burton. It is primarily the succeeding generations of big ICBM systems that influence the rate of growth in spending.
>
> . . .
>
> Sen. Proxmire. . . . I can't understand why fluctuations in that area would have that profound an effect on total defense spending.
>
> Mr. Burton. Well, the strategic programs, it is true, are a small part, but their procurement costs are large enough to affect the rate of growth of defense spending at the margin. The other thing that is affecting spending now is investment in aircraft programs.

Defense spending was still seen to be rising by 3 to 5 percent per year in the early 1980s. The CIA stated in 1980 that defense investment was growing at nearly the same rate as total defense, and that procurement was the major force driving defense upward. In 1981 and 1982, the CIA asserted that the share of GNP devoted to defense had increased from 12–13 percent to 13–14 percent (JEC, 1981, p. 125; JEC, 1982, p. 252; JEC, 1983, p. 185).

Throughout this period, forecasts of continued growth were based on assessments of the international situation and the military threat from a Soviet perspective, and from observed activities in the Soviet defense sector. For example, in 1979, CIA Director Stansfield Turner named the

following factors to support his belief that Moscow was planning to maintain a 4 percent average annual defense increase through the early to mid-1980s: Soviet concerns about the Chinese threat, NATO's efforts to increase its defense spending, planned U.S. strategic programs for Cruise missiles, Trident submarines, and the MX; and the momentum of capital construction and weapons production in the U.S.S.R. The agency saw a strong correlation between the completion of capital construction in the defense industries and later upswings in defense spending growth rates and expected a renewed increase in spending in the early to mid-1980s. Weapons deployment programs underway and new systems in advanced stages of development also appeared to signal new procurement commitments (JEC, 1980, p. 14). Moreover, the new weapons were more complex and more costly than those they replaced. Cost escalation appeared to be more rapid than in the United States. If so, increased expenditures for maintenance and modernization would also be required (CIA, 1977, p. 9). A new factor was added in 1981: The fact that the Eleventh Five-Year Plan targeted the highest growth for those branches of heavy industry most closely tied to the military bolstered the CIA's perception of Soviet defense spending intentions (JEC, 1982, p. 258).

This view continued to hold despite the CIA's recognition as early as 1977 that the Soviet economy was no longer growing fast enough to enable Moscow to achieve its economic and military objectives simultaneously. The Agency observed then that the annual rates of defense growth it was forecasting would exceed the rate of GNP growth, and that, if this trend continued, the military burden would increase steadily and the share of GNP left over for investment and consumption would decline. It speculated that a persistent economic slowdown could cause the Soviets to consider ways to reduce the growth of defense expenditures (CIA, 1977, p. v; JEC, 1980, pp. 11, 15).

But the CIA thought it unlikely that defense industrial capacity would be shifted to the production of civilian investment goods or that weapons programs in progress would be abandoned. It judged that the military and other institutional forces would oppose reductions in the defense budget during the coming period of leadership changes and those contending for power would not want to alienate the military. It was also argued that even a substantial cut in the rate of defense growth would have only a marginal effect on economic growth in the medium term (CIA, 1977, p. 18; JEC, 1980, pp. 19–22). A freeze of military investment beginning in 1980 would not add greatly to new fixed investment by 1990. More drastic action on defense spending would have to be taken in combination with other measures to improve prospects for the economy. For short-term, partial relief, the Soviets might be willing to stretch out research and development programs and production schedules, and slow the rate of expansion of defense industrial capacity. This would release

some resources that could be used for civilian production (CIA, 1977, p. 18).

The process which led to the 1983 revisions began about a year earlier when, in the course of the annual review of current and historical defense spending information, compelling evidence indicated there was a new trend rather than a cyclical pause. To date, the agency has not disclosed the details of the new information or why it took until 1983 to disclose the fact that the trend had changed.

THE CIA EXPLANATION[5]

Why did procurement stop growing? The Agency attributes the slowdown to three groups of factors: economic constraints, technical problems, and policy decisions. The procurement growth slowdown corresponded wth an unprecedented slowdown in the growth of the economy. The CIA suggests that Soviet leaders, faced with increasingly severe shortages and bottlenecks coming on top of the characteristic tautness of Soviet planning, were no longer able to insulate the defense sector from the problems affecting the economy generally.

Technical problems were another important factor. The defense industry has experienced difficulties in mastering the advanced technology required by modern weapons systems. The CIA believes that, for a number of major weapons, technical delays pushed back serial production for several years, lowering annual production rates and delaying deployments for some new systems. Some funds budgeted for procurement may have been redirected to RDT&E because of the increasing complexity of new weapons.

Policy decisions also played a role. The leadership, in anticipation of or in response to technical problems and industrial bottlenecks, may have decided as a matter of policy to stretch out military procurement. There is nothing to indicate that Andropov, during his brief tenure as head of state, made any effort to reverse the slowdown in military spending. If his policy was to hold to the course of slower military growth, it was probably due to economic considerations. At a visit to a Moscow machine-tool factory, the CIA reports, "he implied that a healthy economy is a precondition of military power—suggesting that defense could no longer count on retaining unquestionable priority in the distribution of resources" (p. 236). The leveling off of procurement in recent years was accompanied by an increase in the civilian share of machinery production, and that trend seems to have continued in 1982 and 1983. Finally, the Soviet decision to comply with the SALT I and SALT II agreements may have slowed procurement in some areas.

[5]This summary of CIA views is taken from the testimony and materials given to the JEC by Robert Gates, Chairman, National Intelligence Council, and Deputy Director for Intelligence, CIA (JEC, 1984).

Although the CIA is not able to calculate the net effect or estimate the relative importance of the factors that contributed to the slowdown, it has leaned toward the economic and technical ones. Robert Gates testified to Congress, "My view is that at this point the principal factors probably were the result of forces over which they had no control" (JEC, 1984, p. 270). The policy factors, in Gates' view, have to do more with the economic policy mistakes made in the mid-1970s—decisions about investment which had a negative effect on overall economic development in the latter half of the decade—than with adherence to the SALT agreements or a desire to reduce investment in defense spending.

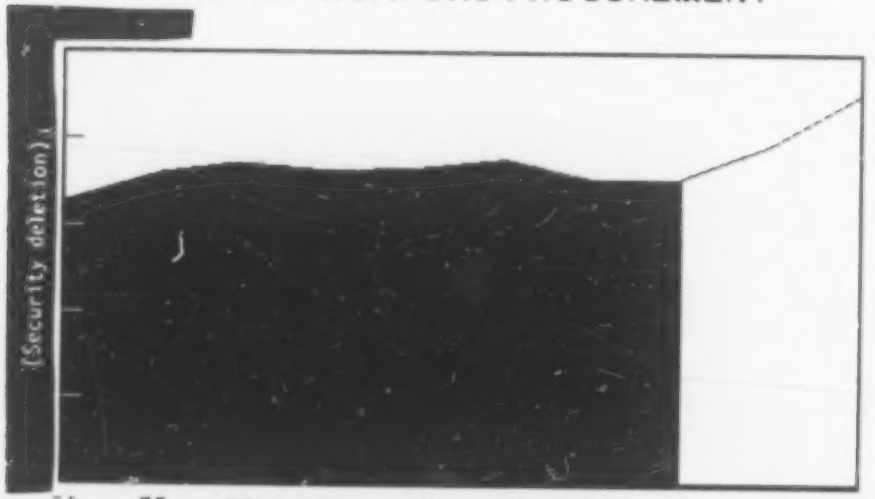
Economic Difficulties

The sharp drop in the growth of industrial production in the second half of the 1970s can be traced to the cumulative effects of a long list of ongoing problems: the depletion of resources in the major industrial regions, aging of the capital stock, the military burden, and the systemic defects of a centrally planned economy, as well as the decision by Soviet planners to reduce the growth of national income and industrial production and to reduce by half the growth rate of total new fixed investment in the Tenth Five-Year Plan (1976-1980) (Levine, Bond, Movit, & Goldstein, 1983; Schroeder, 1985). Soviet planners assumed that they could compensate for reduced growth of fixed investment by improving efficiency and productivity. When the productivity gains were not achieved, conditions worsened and bottlenecks spread throughout the industrial sector.

The CIA hypothesizes that the resulting industrial production bottlenecks spilled over to the defense sector, contributing to the slowdown of defense production and defense spending. Only anecdotal evidence is brought forward to support either assumption. Several authors have discussed the unfavorable effects of the lower level of investment and other policies on the productive capacities and efficiency of the machine-building industries, and the consequences of shortages of steel and manpower on machinery production (see, e.g., Cohn, 1982, pp. 186-188; Rumer, 1982, pp. 53-68; Whitehouse & Converse, 1979, p. 411). The poor performance of the machinery industries, where most defense production takes place, may be considered indirect evidence of the spillover effects of industrial bottlenecks. But direct linkages to the defense industries have yet to be established.

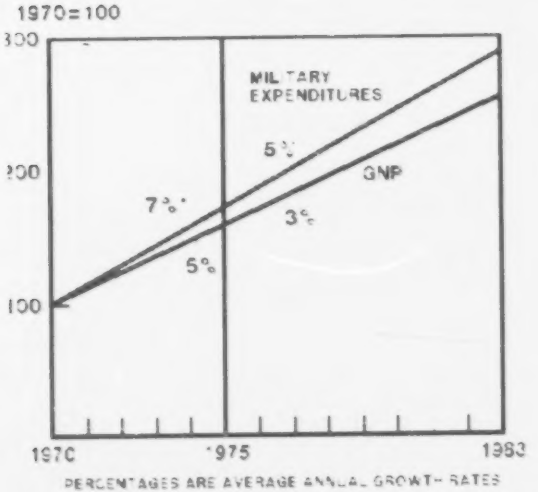
The CIA explanation represents a fundamental revision of the conventional view of the relationship between defense and the economy. If the CIA is correct about the defense slowdown, it would be incorrect to continue asserting that the Kremlin fails to consider costs as a major factor in its decisions about the military or that the defense sector is impervious to problems in the economy. Even if one argues, as will be discussed shortly, that weapons deliveries slowed but procurement did

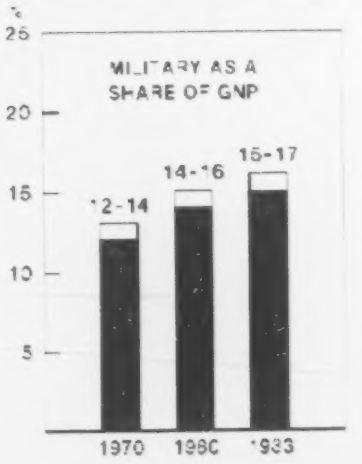
PRELIMINARY ESTIMATE OF DOLLAR COST OF MAJOR SOVIET WEAPONS PROCUREMENT*



*BASED ON APPROXIMATELY 200 MAJOR SYSTEMS ACCOUNTING FOR OVER ONE-HALF OF TOTAL PROCUREMENT

GROWTH COMPARISON OF MILITARY EXPENDITURES AND GNP





not, it is apparent that additional resources were not allocated, nor were extraordinary measures taken, to maintain the higher delivery rates that were anticipated. The slowdown in weapons deliveries by itself would be significant as a divergence from past trends. The newly revised estimates go beyond that and cast doubt on the proposition that Soviet defense spending grew throughout the 1970s at a relentless and rapid rate.

Furthermore, the new estimates weaken the view that the Soviet Union is a dual economy composed of an inefficient, relatively backward civilian industry and a modern defense industry. Western perceptions of the Soviet defense sector were changed considerably by the 1976 revisions because they showed that the CIA had been underestimating the ruble prices of Soviet defense goods (but not, for the most part, their quality or quantity) and thereby overestimating the efficiency of defense production. Once the proper price adjustments were made, it was clear that the costs of production—and, hence the military burden—were higher than they had been thought to be. Stansfield Turner, then Director of the CIA, explained the reason for the revised estimate of the military burden: "The percentage of their gross national product going to defense increased in our estimate not because their defense programs are larger than we thought, but because the efficiency of the defense sector of their industry is much less than we had believed" (JEC, 1977, p. 17).[4]

Intelligence analysts continue to be impressed by the preferential treatment given to the defense industries in the allocation of capital, materials, services, and skilled labor. The defense industries are no doubt held to and often achieve higher standards of performance than the civilian industries; but the new CIA conclusions that industrial bottlenecks spilled over to defense, and that technical difficulties in the manufacture of new weapons has delayed serial production, indicates that the dual economy thesis may be overdrawn. If the Soviets are unable or unwilling to insulate the defense industries from industrial bottlenecks, their privileged status may not be as great as was once thought. The defense industries may be more closely integrated with the rest of the economy than has previously been understood.

Because the evidence supporting this view of the relationship of the defense sector to the remainder of the economy is sketchy, it should be viewed as an interesting hypothesis deserving extensive research rather than an established fact. The coincidence of the slowdown in military procurement growth and the slowdown in the growth of the economy

[4] The 1976 revisions of Soviet defense costs are sometimes confused with the A Team-B Team exercise, the results of which were also made public in 1976. The two inquiries were conducted separately by different groups and concerned different issues. The revisions of the cost estimates were performed in-house by CIA analysts and involved a review of all Soviet defense activities. The A Team-B Team exercise was established by President Ford as "an experiment in competitive analysis." A group of outside experts (the B Team) was set up to review the official assessment of Soviet strategic weapons made by the U.S. intelligence community's analysts (the A Team) (Select Committee on Intelligence, 1978).

is not by itself very meaningful. The CIA correctly notes that the industrial growth rate decline in the latter half of the 1970s was far steeper and more rapid than the previous deterioration in growth rates. That may have caused unusual difficulties in the production of defense goods. However, the only way to document such linkages convincingly is through a systematic analysis of where the bottlenecks occurred and how they affected military procurement.

It is also possible that Soviet defense expenditures in current prices grew faster than GNP, even though the CIA measure of defense costs in constant prices shows a decline in growth rates. Bottlenecks tend to increase production costs by increasing the costs of the inputs. For example, if costs of extracting raw materials go up because of depletion or higher transportation costs, they increase the costs of the end product. The Soviet defense sector may enjoy the same high priority it has been thought to enjoy; but the resource costs of overcoming bottlenecks may mean that it was necessary to spend more to get the same level of production.

Technical Difficulties

The CIA concluded in 1977—the year we now believe procurement stopped growing—that the Soviets were adopting more sophisticated military technology across the entire range of weaponry despite their relatively inefficient performance in introducing new technology into the production process. Soviet military technology lagged behind the United States, the CIA said, but the gap was due more to the preference for standardization and simplicity than an inability to incorporate more advanced technology. At the same time, the Soviets felt pressed to improve quality control in defense production. The Soviet approach to quality control was described as a labor-intensive, "brute-force" system consisting mainly of high levels of production and high rejection rates (JEC, 1977, pp. 25, 40–41). It is probably the case that the Soviet preference for standardization and simplicity was in part a response to poor innovation performance.

More recently, the CIA has maintained that the Soviets are closing the technology gap in many areas and, on at least one occasion, argued that the technical superiority of the United States and its allies is "eroding" as the Soviet Union and its allies introduce more and more sophisticated weaponry (CIA, 1982, p. 1; JEC, 1981, p. 156). The Defense Department viewed the situation with greater alarm in 1981 when it stated that the Soviets were able to reduce dramatically the U.S. lead in virtually every important basic technology and that the United States is losing its lead in key technologies (DOD, 1981, p. 71). The Pentagon's 1983 edition of *Soviet Military Power* refers to the "sharp narrowing" of the technological gap between the United States and the Soviet Union; the 1984 edition states that the USSR has "significantly reduced" the lead in technologies of military importance (DOD, 1983, p. 71; DOD, 1984, p. 103).

The Defense Department's own scorecards of relative technologies point in another direction. In the annual reports of the Undersecretary of Defense, Research, and Engineering, two tables compare U.S. and Soviet technologies. Considering the 20 "Most Important Basic Technology Areas," the 1983 report found the United States superior in 15, equal in four, and behind the Soviets in only one. The 1984 report found the United States superior in 15, equal in five, and behind in none. Considering the relative technology level in deployed military systems, in the 1983 report, the United States was viewed as being ahead in 14, equal in 13, and behind in five. In the 1984 report, the United States was ahead in 17, equal in 10, and behind in five (DOD, 1983, pp. II 18-19; DOD, 1984, pp. II 32-33).

The figures signify serious Soviet shortcomings relative to the United States in the area of basic military technology. Soviet performance is somewhat better in getting new technology into deployed systems, but here too it lags behind the United States, and the comparison is influenced by U.S. shortcomings in getting new technology off the drawing board and into the field. The problems experienced in the early stages of development may explain why Soviet outlays on R&D have been rising as a percentage of total military investment costs. Soviet weaknesses in initiating and adopting new technology could become more pronounced as the trend toward increased sophistication of weaponry continues.

How these technical problems affect procurement costs is another matter. It is likely that, when they cause stretchouts, some production costs will be deferred. But it is almost inevitable that development costs will rise, possibly by an equivalent or a greater sum. For example, if a planned production run of 10 missiles at a cost of $5 million each is postponed on account of a technical snag, there may be a short-term budgetary savings of $50 million; however, this savings may be entirely lost if R&D costs rise sharply in an effort to eliminate the snag. As the CIA acknowledges the Soviet practice of redirecting funds budgeted for procurement to R&D, the possibility must be considered that development cost increases equal or exceed production cost savings derived from stretchouts.

Unfortunately, development costs are problematic because of the uncertainties surrounding estimates of Soviet R&D. Of all the estimates of Soviet military costs made by the CIA, the R&D estimates are the least reliable. These costs are estimated largely from official Soviet statistics and have a wide margin of error. It is easier to estimate what the Soviets produce than what they research.[7]

[7] In 1978, the CIA stated, "The estimate for Soviet RDT&E is the least reliable of our estimates. Because the estimate is based on highly aggregated and uncertain data, we cannot speak with confidence, nor in detail, about the allocation of this category of defense spending among the services or among missions. Nevertheless, the information on which the estimate is based—published Soviet statistics on science, statements by Soviet authorities on the financing of research, and evidence on particular RDT&E projects—suggests that military RDT&E expenditures are large and growing" (CIA, 1978, p. 3).

Thus, there will be doubts about R&D costs regardless of Soviet success or failure in dealing with high technology. That it is possible in theory for an R&D bulge to make up for any production cost decreases due to stretchouts does not necessarily mean that is what happens.

Policy Initiatives

Two types of policy decisions may have contributed to the slowdown in weapons procurement: decisions to change the weapons mix, some possibly driven by the SALT agreements, and a broader decision to stretch out some procurement in order to alleviate economic strains. A CIA spokesman, commenting on the slowdown in weapons deployments after 1976 states, "Practically all major categories of Soviet weapons were affected—missiles, aircraft, and ships" (JEC, 1984, p. 230). But were they all affected equally? The question that remains to be discussed is, what changes, if any, in Soviet weapons priorities or in the weapons mix can we observe during this slowdown period?

There are two kinds of evidence: production data and deployment data. Weapons production data compiled by the Defense Intelligence Agency gives some indication of the trends (Table 1). Of 32 categories of weapons produced in 1977-1981 for Soviet forces (excluding exports to foreign recipients), 19 declined or stayed at about the same level and 13 increased. When the period is extended through 1983, the breakdown is exactly the same.[8]

While level or falling rates of production are found in most categories of weapons, on close examination differences emerge among certain categories. Three of the four types of strategic offensive weapons (ICBMs, SLBMs, and ballistic missile submarines) fell, and the one that increased moderately (the Backfire long-range bomber) is considered by many experts to be primarily a medium-range bomber and, therefore, not a strategic weapon. The production of most types of aircraft also declined numerically. In contrast, four out of six kinds of guided missiles increased, as did about one-half of the ground force weapons, and three of the four categories of ships.

It is true that some weapons are much more expensive than others and these differences can be lost in unweighted groupings of dissimilar products. But the pattern does not appear to change much when allowances are made for the diversity of unit costs and the quantities involved. The strategic systems that declined in numbers produced are among the most costly. Tanks are relatively expensive ground force weapons but their decline may be matched by increases in self-propelled and other

[8]The Defense Intelligence Agency compiles and periodically revises estimates of Soviet weapons production. The figures in Table 1 are current as of February 1984. The figures for production excluding exports represent weapons produced for Soviet forces. The trend for exports was similar to that for Soviet forces. Most types of exported weapons declined, although there were modest increases for tanks, infantry combat vehicles, and a few others.

Table 1. USSR Weapons Production, 1977-1983 (excluding exports)

Weapon	1977	1978	1979	1980	1981	1982	1983
Offensive Strategic							
Long-range bombers	30	30	30	30	30	35	35
ICBMs	300	225	225	250	200	175	150
SLBMs	150	250	200	200	175	175	200
Ballistic missile submarines	5	2	2	2	2	1	1
Guided Missiles							
IRBMs	100	100	100	100	100	100	100
SRBMs	200	250	300	300	300	300	350
Antiship cruise missiles	800	825	525	875	825	850	875
SAMs	50,000	53,000	53,000	53,000	53,000	53,000	55,000
Tactical air-to-surface missiles	1,300	1,400	1,200	1,280	1,275	1,300	1,290
Antitank guided missiles	30,000	35,000	40,000	45,000	50,000	63,000	70,000
Ground Forces Equipment							
Heavy & medium tanks	2,800	2,600	2,900	2,800	1,200	2,100	2,400
Infantry combat vehicles	2,700	3,000	2,250	3,100	2,700	2,700	3,000
Armored personnel carriers	800	1,200	1,700	1,750	950	400	300
Armored recce vehicles	850	700	950	875	800	675	700
SP field artillery (100 mm & up)	750	700	750	725	900	1,050	1,050
Towed field artillery (100 mm & up)	1,050	1,100	1,200	900	1,100	1,150	1,025
Towed field artillery (under 100 mm)	0	0	100	100	300	500	600
Artillery-type rocket launchers	350	300	350	400	650	450	650
Artillery-type mortars	50	50	500	500	1,000	1,100	1,100
SP AA artillery	150	150	100	100	150	0	50
Aircraft							
Fighters/fighter bombers	800	800	800	825	800	700	700
Combat capable trainers	5	5	0	0	0	0	0
Noncombat capable trainers	50	50	50	50	25	25	25
Antisubmarine warfare aircraft	10	10	10	10	10	10	5
Military & civil helicopters	900	500	400	500	600	600	625
Military & civil transports	375	350	350	325	275	250	250
Comunications/utility aircraft	50	25	25	10	0	0	0
Naval Ships							
Attack submarines	4	10	9	9	9	7	7
Major surface combatants	10	10	8	10	7	6	9
Minor surface combatants	30	30	35	35	35	35	35
Naval support ships	15	25	25	20	20	10	20

Continued

Table 1. *Continued.*

Weapon	1977	1978	1979	1980	1981	1982	1983
Radar Equipment							
Military ground-based radar	1,100	1,100	1,100	1,050	1,050	900	800

Source: Data provided by the Defense Intelligence Agency (*Congressional Record*, August 10, 1984, pp. S10386–89).

types of artillery. The only types of guided missiles that declined were air-to-surface missiles and they are not the most expensive type of missile. The one category where unit costs might make a difference is ships. There the increase in minor surface combatants and support ships seems to have been more than off-set by the leveling off of attack submarines and major surface combatants. But we see no decline in ship construction.

The production data suggest that the stretchouts were not random or across-the-board. They seem to be concentrated in strategic offensive weapons. Portions of the conventional forces were held level or declined but the overall trend was up.

A similar picture can be found in the data for what was deployed. Information is available for a greater number of deployed weapons than for those produced and in this sense is a richer mine. A complication is that there are lengthy and varying lead times between key milestones, such as testing, production, and deployment of weapons which must be taken into account. The growing lead time between R&D and production has been discussed. A weapon produced in one year may not be deployed until months or years later, depending on its type and whether it is the first of a new class.

To adjust at least partially for production-to-deployment lead times, weapons were grouped according to mission categories and the net changes in deployments calculated for each of two five-year periods, 1973–1977 and 1978–1982. The net change is the number added to or subtracted from the existing force during each period. This calculation is an imperfect measure as it lumps together new additions and withdrawals from the order of battle, and it gives no indication of technical advances. Nevertheless, these data shed some light on relative Soviet military priorities regarding the quantitative side of the weapons buildup during the two five-year periods. For example, in 1973–1977, the Soviet land-based ICBM force declined by 70 missiles; in 1978–1982, it declined by 79 missiles. The number of nuclear-powered ballistic missile submarines increased by 34 in 1973–1977; it increased by only one in 1978–1982. The net changes for 44 different types of strategic and conventional weapons are displayed in Table 2.

The data show a sharp drop in the number of offensive strategic weapons added in 1978–1982. There was a mixed trend in aircraft; there were increases for some types and reductions for others. There were

Table 2. USSR Weapons—Net Change in Deployments (numbers of weapons)

Weapon	1973–1977	1978–1982
Offensive Strategic		
Land-based ICBMs	-70	-79
Ballistic missile submarines (nuclear)	34	1
Ballistic missile submarines (diesel)	-1	-5
Sea-launched ballistic missiles	469	3
Defensive Strategic		
ABM launchers	0	-32
SAM launchers	-300	900
Interceptor aircraft	-275	-175
Theater Nuclear		
Intermediate-range missiles	-10	250
Medium-range missiles	-20	-220
Short-range missiles	286	157
Theater bombers	-225	-80
Fighter/attack aircraft	1,200	800
Nuclear capability artillery	400	1,100
Ground Forces Equipment		
Heavy and medium tanks	2,900	4,600
Armored personnel carriers	12,000	27,000
Artillery	2,600	4,500
Multiple rocket launchers	10	240
Antitank guided missiles	8,200	16,000
Heavy mortars	1,000	2,200
Surface-to-surface missiles	286	157
Surface-to-air missiles	2,100	1,150
Aircraft		
Fighter/attack	350	625
Reconnaissance and surveillance	-250	-45
Helicopter gunships	400	800
Carrier-based helicopters	10	0
Anti-surface ship bombers	-5	-35
ASW fixed wing	60	25
Land-based ASW helicopters	-40	10
Tankers	5	-10
Utility/cargo helicopters	650	1,100
Strategic airlift	110	95
Tactical airlift	-130	-225

Continued

Table 2. *Continued*

Weapon	1973–1977	1978–1982
Naval Ships		
Aircraft carriers	1	2
Cruisers	7	3
Destroyers	−6	−7
Frigates	28	35
"Open water" patrol	10	15
Shore patrol	−90	−50
Attack submarines (nuclear)	22	25
Attack submarines (diesel)	−20	−15
Amphibious	8	8

Source: Collins, *U.S./Soviet Military Balance, Statistical Trends, 1970-1982*, Library of Congress, Congressional Research Service, Washington, DC, 1983, and author's calculations.

large net increases in all other categories: strategic defensive weapons, theater nuclear weapons, conventional ground weapons, and most naval ships.

A more detailed breakdown of annual deployments provides an additional perspective. Each year's new deployments can be seen as the conclusion of the weapons acquisition process and fairly good evidence of what has recently been produced. As observed above, there are lags between production and deployment, so the figures must be used carefully.

The new deployments for the years 1977–1982 follow trends similar to the production trends. Strategic offensive weapons were deployed for the most part at level or declining rates. Deployments of strategic defensive and theater nuclear weapons went up or remained about level, as did those for the majority of general-purpose ground weapons, ships, and submarines. Deployments of land-oriented and naval aircraft appear to have declined except for helicopters. There were some deviations from the general trends. A large deployment of ICBMs occurred in 1982 and for some weapons, such as tanks, there were sharp downturns for one or more years, usually followed by sharp upturns. The trends for individual weapons can be seen in Table 3.

The CIA bases its conclusion that the procurement stretchouts were more a matter of necessity than choice partly on the ground that they affected many of the high-cost, high-technology systems that caused technical problems for the defense industries. An alternative explanation is that there was a deliberate change in military investment priorities to reduce the emphasis on strategic offensive systems while continuing to emphasize theater nuclear and most categories of conventional forces.

The Soviets undoubtedly have had problems assimilating advanced technology, but important qualitative gains were embodied in the many

Table 3. USSR Weapons—New Deployments

Weapon	1977	1978	1979	1980	1981	1982
Strategic Offensive						
ICBMs						
SS18, mod 1/3	24	0	0	0	0	0
SS18, mod 2	40	100	14	8	0	0
SS19, mod 4	0	0	50	70	0	80
SS17, mod 1	30	30	40	10	0	0
SS17, mod 2	0	20	0	0	0	0
SS17, mod 3	0	0	0	0	0	110
SS19, mod 1	0	20	60	0	0	0
SS19, mod 2	20	40	0	0	0	0
SS19, mod 3	0	0	0	20	60	160
Total	*114*	*190*	*164*	*108*	*60*	*350*
Ballistic Missile Submarines						
Delta I	5	0	0	0	0	0
Delta II	4	4	1	1	3	1
Hotel III	0	0	1	0	0	0
Total	*9*	*4*	*2*	*1*	*3*	*1*
Submarine Launched Ballistic Missiles						
SS-N-8	66	0	6	0	0	0
SS-N-17	12	0	0	0	0	0
SS-N-18	64	64	16	16	48	16
Total	*142*	*64*	*16*	*16*	*48*	*16*
Strategic Defensive						
SAM Launchers						
SA-3 GOA	0	0	100	0	0	0
SA-5 Gammon	0	100	0	0	100	0
SA-10	0	0	0	30	570	600
Total	*0*	*100*	*100*	*30*	*670*	*600*
Interceptors						
Mig-23 Flogger	50	50	100	350	150	200
Mig 25 Foxbat	0	0	0	0	50	0
Mig 31 Foxhound	0	0	0	0	0	25
Total	*50*	*50*	*100*	*350*	*200*	*225*
Theater Nuclear						
IRBM Launchers (Missiles)						
SS-20	0	60	60	40	80	95
MRBM Launchers						
SS-4	20	0	0	0	0	0

Continued

Table 3. *Continued*

Weapon	1977	1978	1979	1980	1981	1982
SRBM Launchers (Missiles)						
SS-22	12	12	12	12	12	0
Scud B	50	30	0	0	0	0
SS-23	0	0	0	0	18	30
Frog	0	20	0	30	0	0
SS-21	4	6	0	0	10	5
Subtotal	*66*	*68*	*12*	*62*	*40*	*35*
Grand Total	*86*	*128*	*72*	*102*	*120*	*130*
Theater Bombers						
TU-22 Blinder	0	0	0	0	25	0
TU-25 Backfire	10	20	10	15	15	10
Total	*10*	*20*	*10*	*15*	*40*	*10*
Fighter/Attack						
Mig-23 Flogger	200	200	100	200	200	0
SU-17 Fitter C/D	150	150	50	100	0	0
SU-24 Fencer	100	50	50	125	125	50
Total	*450*	*400*	*200*	*425*	*325*	*50*
Artillery						
Towed/SP Gun (152 mm)	200	200	100	100	100	300
Towed/SP Howitzer (240 mm)	0	100	0	0	100	0
Total	*200*	*400*	*100*	*100*	*200*	*300*
Ground Force Equipment						
Tanks						
T-62	1,000	0	1,000	0	0	0
T-64	1,000	0	1,000	0	2,000	0
T-72	1,000	0	1,000	1,000	2,000	1,000
T-80	0	0	0	0	100	400
Total	*3,000*	*0*	*3,000*	*1,000*	*4,100*	*1,400*
APC/AFV						
BTR	2,000	2,000	3,000	1,000	0	0
BMD	500	300	200	1,000	0	1,000
BMP	1,000	4,000	2,000	1,000	1,000	4,000
MTLB	0	0	1,000	1,000	0	0
Total	*3,500*	*6,300*	*6,200*	*4,000*	*1,000*	*5,000*

Continued

Table 3. *Continued*

Weapon	1977	1978	1979	1980	1981	1982
Artillery						
122 mm	1,000	0	1,000	1,000	2,000	0
130 mm	300	0	0	0	0	0
152 mm	0	600	400	400	0	0
Total	*1,300*	*600*	*1,400*	*1,400*	*2,000*	*0*
Multiple Launch Rocket System	10	10	30	50	75	75
Antitank Guided Missile Launchers						
Primary	1,000	0	500	500	0	1,500
Secondary	1,000	2,000	4,000	2,000	1,000	5,000
Total	*2,000*	*2,000*	*4,500*	*2,500*	*1,000*	*6,500*
SAM Launchers						
SA-4	200	100	100	0	50	150
SA-6	100	100	0	100	0	0
SA-8	100	50	50	100	0	150
SA-9	200	100	100	0	0	0
SA-11	0	0	0	0	0	50
SA-13	0	0	0	0	100	100
Total	*600*	*350*	*250*	*200*	*150*	*450*
AA Guns						
ZSU 23/4	500	0	0	100	0	0
57-mm S-60	0	1,000	9	0	0	0
Total	*500*	*1,000*	*0*	*100*	*0*	*0*
Land-Oriented Tactical Aircraft						
Fighter/Attack						
Mig-23 Flogger	200	200	100	200	200	0
SU-17 Fitter-C	150	150	50	100	0	0
SU-24 Fencer	100	50	50	125	125	50
SU-24 Frogfod	0	0	0	0	0	25
Total	*450*	*400*	*200*	*425*	*325*	*75*
Theater Bombers						
TU-22 Blinder	0	0	0	0	25	0
Reconnaissance and Surveillance						
Mig-25 Foxbat	30	20	25	0	0	0
SU-17 Fitter H	0	0	20	40	40	30
Total	*30*	*20*	*45*	*40*	*40*	*30*

Continued

Table 3. *Continued*

Weapon	1977	1978	1979	1980	1981	1982
Helicopter Gunships						
MI-24 Hind	100	100	100	100	100	250
MI-8 Hip	50	50	50	50	0	0
Total	*150*	*150*	*150*	*150*	*100*	*250*
Naval Aircraft						
Carrier-Based Aircraft (Fighter/Attack)						
Yak-36 Forger	15	5	10	15	0	5
Shore-Based Aircraft (Antisurface Ship Bombers)						
SU-17 Fitter C	25	10	0	0	0	0
TU-26 Backfire	5	15	15	10	10	5
Total	*30*	*25*	*15*	*10*	*10*	*5*
ASW Aircraft (Fixed Wing)						
TU-95 Bear-F	0	10	0	15	0	5
ASW Aircraft (Helicopters)						
MI-14 Haze	5	10	10	5	10	25
Naval Ships						
Guided Missile VOTL Carriers	0	1	0	0	0	1
Cruisers (nuclear)	0	0	0	1	0	0
Cruisers (oil)	2	2	0	0	1	0
Destroyers	1	0	0	0	3	0
Guided Missile Frigates	2	6	2	4	1	2
Small Frigates	5	5	5	5	0	10
"Open water" patrol	1	5	0	0	5	0
Shore Patrol	0	0	0	0	10	5
Attack Submarines SSGN[a]	1	1	1	1	1	2
Attack Submarines SSN[b]	4	3	4	5	5	3
Airlift						
Strategic Airlift IL-76 Candid	40	0	20	0	50	25
Utility/Cargo Helicopters	225	200	0	200	400	300
Merchant Marine Ships						
Cargo Ships	75	0	0	50	0	70
Tankers	25	0	0	25	25	0

Continued

Table 3. *Continued*

Weapon	1977	1978	1979	1980	1981	1982
	Amphibious Lift					
Amphibious Transport Docks LPD	0	1	0	0	0	0
Landing Ship Tank LST	5	0	5	0	0	2
Air Cushion Vehicles	0	10	0	5	5	5

[a]Nuclear cruise missile submarine
[b]Nuclear submarine
Source: Adapted from Collins, 1983

strategic and conventional systems introduced in the 1970s, including weapons such as the Backfire bomber, the SS-20 missile, and the new generation of strategic missiles. According to U.S. intelligence and Western military experts, Moscow had achieved at least strategic parity by 1981. In light of these achievements, one wonders whether an argument that the Soviets were forced into a selective procurement slowdown because they were overwhelmed by new technologies is tenable. It is possible that procurement schedules were not met simply because of difficulties with some technologies, but this may not fully explain why the strategic offensive weapons were delayed while other sophisticated weapons were not, or the fact that it was in the strategic area that the Soviet Union made such notable gains on the U.S.

The disaggregated estimates of Soviet defense spending, to the extent they are known, lend some support to the thesis that there was a change in military investment priorities. One of the main uses of cost estimates is in the measurement and comparison of military products that have different values. For example, if there were cost estimates of Soviet spending for naval ships, we would know whether the trend for all ships was up or down, and thus whether in terms of dollars or rubles the increase in minor combatants and other classes offset the reduction in major combatants. We do not have cost estimates for Soviet naval ships and most other categories but some disaggregated defense cost data have been made available.

The Department of Defense estimates that the dollar costs of Soviet strategic forces activities (investment plus operations) were about the same in 1981 as in 1976 (DOD, Weinberger). As arms production and deployments for theater nuclear and a portion of strategic defense forces increased, it can be concluded that the procurement costs of offensive strategic weapons probably declined. This contrasts with what appears to have been a level trend for conventional weapons. In addition, if the overall costs of strategic forces were about level, there was probably growth in the overall costs of conventional forces.

The thesis also receives some support from the deployment data.

Knowledge of the date of initial deployment of a new Soviet weapon makes it possible to infer approximately when the decision to initiate that weapon was made and to correlate the time of that decision with the five-year economic plans and other events. To do this, one needs to know the lead times from the start of a weapon to its initial deployment.

Actual lead time information is not available for Soviet weapons but much of it is known for U.S. counterparts. Because of the comparability of major weapons and the similarity of the acquisition process in the two countries, lead times should be similar.[9] A key decision is when to proceed with full-scale development. It is at this stage that program costs rise rapidly and major resource commitments must be made. In the United States, it is estimated to take an average of seven years to get from this point to the first operational deployment of a ballistic missile; the lead time for major aircraft is estimated at about eight to nine years; and for tanks, ships, and submarines an estimated five to six years.

Using these estimates, it can be deduced that the decisions to go forward with most major Soviet weapons initially deployed in the mid- to late 1970s were probably taken in the late 1960s to early 1970s, or at about the beginning of the Ninth Five-Year Plan (1971–1975). According to the CIA, Soviet military investment decisions are made as part of the five-year economic plans, simultaneously with economic investment decisions (JEC, 1980, p. 22). Given the large number of strategic and conventional weapons introduced since 1976 and the lead times described above, it is likely that, if there was a decision to change military investment priorities for this period, it was made in conjunction with decisions about the Ninth Five-Year Plan. Of course, a decision to change the mix of weapons would not necessarily control the level of effort for procurement or prevent changes from being made in later years.

A number of circumstances add to the likelihood that a decision to change the mix was made at the time that the Ninth Five-Year Plan was being developed. By the late 1960s, the Soviets had just about completed work on the third generation of land-based ICBMs (SS-9, SS-11, and SS-13) and the fourth generation (SS-17, SS-18, and SS-19) was well into development. The fourth generation of missiles was designed in the mid-1960s and underwent flight tests mostly during the early 1970s (Berman & Baker, 1982, pp. 104–105). These missiles would give the Soviets a highly effective, accurate, and survivable capability and form the basis for claiming strategic parity with the United States. All the new deployments of land-based ICBMs during 1977–1982 were fourth-generation missiles. Much the same can be said about the fifth-generation sea-based missiles, the SS-N-18, designed in the late 1960s.

In 1971, the Soviets were preparing for talks with Preident Nixon

[9]The Defense Department states, "Major new Soviet systems or modernization programs take about 8–15 years to develop. This is about the same time it now takes in the United States" (DOD, 1983, p. II-3).

and completion of the SALT I agreements which would formally acknowledge the U.S.S.R.'s status as an equal military superpower. At the same time, the Soviets had been involved in many border skirmishes with China and were implementing a massive buildup of military forces in the Far East. So soon after the military invasion of Czechoslovakia and concerns about the stability of the Polish government, and the usual worries about NATO military capabilities, they would not have been inclined to lessen their efforts in Europe. A judgment by the Kremlin that the mix of strategic and conventional forces needed to be changed in the mid- to late 1970s by a somewhat relaxed deployment pace for strategic offensive missiles would have been consistent with the circumstances as they might have been perceived by the Kremlin at the start of the Ninth Five-Year Plan.

CONCLUSIONS

We may never know for sure why Soviet defense spending grew more slowly after 1976 than before and why procurement leveled off. The CIA's explanation attempts to take account of a variety of technical, economic, and political factors. It does not speculate about the relative contribution of the factors, and it is clear that such a judgment would be difficult to make. The lack of information about the linkages between industrial production and the defense industries, about the distribution of costs as between military R&D and weapons manufacturing, and about military planning are barriers to understanding the causes of the defense slowdown. These topics deserve a major research effort.

Whatever the causes of the procurement slowdown, strategic offensive weapons were produced and deployed at relatively relaxed rates after 1976. Intended or not, there was a shift in investment priorities and the mix of weapons, favoring the theater nuclear and portions of the conventional over the strategic forces.

The revised estimates may be unsettling to those who relied on earlier estimates to surmise Soviet intentions and trade-offs concerning guns and butter. The lesson is that all estimates of Soviet military spending should be considered just that, estimates, with margins of error that range from low to high depending on the resource category, and subject to change as new facts emerge. The level of confidence is higher for medium-term and long-term periods than for yearly movements, but short-term fluctuations should be followed closely as possible signals of a change in the trend. The most recent year or two in any updated estimate is especially subject to revision. The spending estimates are probably not sufficient by themselves to form judgments about military intentions or macroeconomic trade-offs.

In spite of the uncertainties, the reliability of the estimates is high for performing tasks that can reasonably be expected of them, such as establishing the size of Soviet military forces and making international

comparisons. The credibility of the estimates has been strengthened by the CIA's practice of publishing explanations of the methodology, subjecting it to review by outside experts, and by revising the estimates when new information is obtained.[10]

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[10]Much more is known about Soviet military allocations than is generally appreciated. Unfortunately, the current policy is to make public mostly the CIA's general conclusions and not the details of its analyses. In the past, information about resource categories, military missions, investment, manpower, and the buildups against NATO and China were made available. It would greatly improve the public data base if the agency would publish the disaggregated military spending estimates. This would permit, for example, analyses of the organizational, functional, and geographic distribution of Soviet military resources, and possibly the costs associated with such events as the invasion of Afghanistan and the SALT agreements.

In addition to the CIA's defense spending estimates, the DIA's weapons production estimates and the Library of Congress order of battle and deployment statistics throw considerable light on Soviet military allocations. The latter two series have been expanded and refined in the past several years and should be read together with the spending estimates for a better understanding of military investment trends.

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Comments on Richard Kaufman's Article

John Steinbruner[1]

In assessing the Soviet defense effort, U.S. intelligence agencies have generally had a strong inclination to impute systematically hostile intent and a strong reluctance to infer deliberate restraint. In recent years in particular, evidence indicating increases in Soviet military capabilities has been much more readily accepted, elaborated with supplementary assumptions and used as a basis for projections than has evidence suggesting moderation. To the extent that it is acknowledged, this bias is defended by evoking the principle of consecutive planning, which holds that it is prudent to expect and to prepare for the worst a dedicated opponent can plausibly do. The rationale is that errors in overestimating the Soviet threat are less serious in their consequences for national security than errors in underestimating it.

The analysis of Soviet defense spending, reviewed in Richard Kaufman's very important article, reflects this tradition. For seven years intelligence agencies overestimated Soviet defense spending, ignoring accumulating evidence that military procurement was stagnant. Physical observations of Soviet procurement activities—the production and deployment of new weapons—have long provided the most reliable and definitive information for U.S. intelligence estimates, and the data reported in Kaufman's tables would have been available in the years indicated. Kaufman's review indicates that intelligence analysts appealed to short-term economic and planning cycles to explain their dissonant observations, while giving little weight to the possible contribution of conscious Soviet decisions. These agencies have advanced similar explanations to explain the revised trend: unintended economic and technical difficulties are seen as the most plausible reason for the observed moderation in the Soviet defense effort.

Kaufman entertains the possibility that reduced growth in Soviet defense spending was the result of Soviet planning decisions, and in examining the composition of the Soviet procurement effort he notes evidence suggesting that the observed moderation dated from the SALT I agreement. He treats this possibility with a caution, however, that implies the burden of proof is against it, and he concludes that the inherent level of uncertainty in the data on Soviet defense spending prevents any explanation from meeting a burden of proof. This cautious conclusion is consistent with well-established analytic techniques used

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by the U.S. intelligence community when faced with substantial uncertainty in the data. However, in the broader context of U.S. security policy that approach is difficult to defend.

First, one must doubt that underestimates of the Soviet threat are so much more serious than overestimates that the consequences of the latter error can be safely neglected. This would only be true if our national security depended solely on military capabilities and if it were possible to defeat the most threatening capability the Soviets might plausibly develop. In that case systematic and uncorrected overestimates would simply result in defense preparations more elaborate and more expensive than necessary, but within broad limits that would be tolerable. Unfortunately, security of this sort is not even remotely possible given the destructive capacities of current offensive forces and their dominance over direct defense under foreseeable technical conditions. Since neither the Soviet Union nor the United States can physically prevent an annihilating attack by the other, both seek to deter it by threatening commensurate retaliation. If that arrangement is to work, both sides must maintain the belief not only that war would be unacceptably damaging but also that it can in fact be avoided. The deterrent threat must be accompanied by assurance of the intent and capacity to restrain it or else the threat works perversely. Under such conditions security depends as much on the balance of judgment as on the balance of capability, and any significant and sustained error in estimating the opponent's intentions is likely to have serious consequences. In particular, a systematic overestimate that ignores Soviet restraint undermines this restraint, and with it the critical judgment that war can and will be avoided.

One can also question whether the degree of uncertainty in the evidence mandates the caution that Kaufman's analysis displays. Setting aside dollar or ruble estimates of Soviet defense spending, which will not support refined analysis, observations of Soviet procurement in major weapons categories are reliably accurate. By combining those data with what is known of the timing and logic of Soviet military planning, it is possible to construct a plausible case for the proposition that the slowdown in Soviet defense procurement was a conscious decision. The logic at work is not difficult to infer. The SALT I treaty and interim agreement formally declared that an equality of security existed between the United States and the Soviet Union at the then prevailing balance of strategic weapons inventories and imposed explicit ceilings and evolutionary rules to enforce and maintain the balance. Since the principles of the agreement were quite explicitly made the centerpiece of Soviet security policy, it is a reasonable inference that both the commitment to maintaining an evolving balance of forces and the detailed restrictions designed to preserve it were incorporated into Soviet defense plans and that the overall moderation of Soviet military procurement and the reallocation of investment are the consequences of implementing those restrictions.

The observed effects on Soviet strategic offensive forces—the highest priority investment of the previous decade—are clear, and too systematic to be explained as an unintended consequence of economic and technical constraints. First, the expansion during the 1960s of the principal Soviet strategic weapon, land-based offensive missles, ceased entirely in the 1970s in terms of new emplacements. From 1960 to 1972 the Soviets added over 1,600 ICBMs and 750 medium- and intermediate-range ballistic missiles to their deployed forces in a tremendous surge of offensive firepower. Against this record, there was a net decline after 1973 both in ICBM deployments and in overall land-based missile deployments (Kaufman's Table 3). The only new land-based missile emplacements after 1973 were for the SS-20 intermediate range system, reflected in Table 2 as a net positive deployment from 1978–1982. The SS-20, however, replaced not only the older SS-5 intermediate-range system but also SS-4 medium range missiles and SS-11 intercontinental range missiles assigned to theater missions, and the reduced deployments in these two categories exceeds the number of SS-20 missiles deployed. The substitution of SS-20 missiles for the SS-11 assigned to theater missions was presumably necessitated, in the Soviet view of the matter, by the provisions of the SALT I interim agreement that imposed restrictions on the SS-11 in reference to U.S. forces while leaving British and French nuclear forces unrestricted. After adding over 2,300 land-based offensive missile emplacements to their deployed forces during the course of the 1960s, holding this number constant during the course of the 1970s was clearly a deliberate act.

As noted in Table 2, a surge in Soviet sea-launched ballistic missile (SLBM) deployments followed the SALT I agreement, but that also essentially ceased after 1978. The decisions to undertake that deployment, a belated matching of the U.S. Polaris and Poseidon force, largely predated the SALT I agreement, given that the construction of submarines requires several years. It is possible that technical difficulties have contributed to the very slow pace of introduction of the newest Soviet ballistic missile submarine, the Typhoon, and that the sharp decline in new SLBM deployments after 1978 reflects these difficulties. Even in that case, however, some deliberate choice would be involved in accepting this effect over a six-year period.

A second set of systematic actions can also be observed in the obvious shift in emphasis after the 1972 agreement from the expansion of strategic offensive forces to their technical improvement. The introduction of the fourth-generation Soviet ICBMs—the SS-17, 18, and 19—revealed a commitment to keep pace with the multiple warhead technology earlier introduced into the U.S. strategic forces. Under the rules of SALT I, however, the new missiles replaced weapons that had not reached the end of their designed life, a policy of direct substitution not characteristic of previous Soviet military practice. Moreover, it is notable that the process of substitution occurred at a rate significantly slower than the surge of the previous decade and on a scale significantly

less than the SALT I agreement would have allowed. During the course of the 1970s, most of the Soviet land-based installations were improved to some extent, but some 580 of the third-generation SS-11 and SS-13 systems were not replaced by a fourth-generation system—a planning decision that allowed restrictive subceilings on multiple warhead launchers to be imposed late in the decade in the SALT II agreement.

Even within the SALT II categories, the Soviet modernization program remained well below what the agreement would have allowed. According to Kaufman's Table 3, the most advanced and most threatening systems, the SS-18 mod 4 and the SS-19 mod 3, have been deployed at levels that are respectively 65 percent and 46 percent of the applicable SALT II ceilings. In terms of total missile warheads, Soviet strategic offensive forces as of mid-1984 have between 50 and 60 percent of their allowed capacity. Though exact timing may have been affected on the margin by external constraints, this basic pattern of offensive force modernization was clearly the result of deliberate scheduling that was more restrictive than it had to be.

These systematic restrictions on Soviet offensive missile forces clearly reduced the burden of military investment in the late 1970s below what it would have been if force level expansion had continued or if technical modernization had been as extensive as possible. The fact that the military sector was not protected from the general decline in economic performance is also notable. Though that observation is subject to the higher uncertainty that accompanies estimates on spending, it does nonetheless imply an underlying acceptance of a stabilized military balance that the Soviets themselves proclaimed as the principal achievement of the SALT treaties.

While these indications of relative Soviet restraint have been masked by the intelligence community's conservative rules of inference, they have been almost entirely ignored in the broader public discussion that accompanies the formulation of security policies in the United States and Europe. Major increases in the destructive potential of Soviet offensive forces generated by the retrofitting of multiple warhead systems and by the introduction of the SS-20 have dominated Western political perceptions and have established an impression of sustained growth in the Soviet military effort, popularly conveyed in recent years by the phrase "relentless momentum." As of April 1984, Secretary of Defense Caspar Weinberger summarized the official threat assessments with two general assertions (Weinberger, 1984, p. 4):

> The USSR has greatly increased its offensive military capability and has significantly enhanced its ability to conduct military operations worldwide.
>
> The Soviet build-up is made possible by a national policy that has consistently made military material production its highest economic priority.

"For decades," Secretary Weinberger continued, "Soviet industry has manufactured a broad spectrum of weaponry and military support equipment in staggering quantities—production levels achieved by extremely large investments of money, raw materials and manpower" (Weinberger, 1984, p. 3). He made no mention of the revised data on defense spending or the observations of constant military procurement and he introduced no qualifications that reflected any doubt about the accuracy or completeness of the summarizing assertions. The data reported by Richard Kaufman have been recorded but not absorbed and their implications for security policy remain largely unexamined.

This, it would seem, is more bias than prudence. Fears about the Soviet military effort that are rendered immune from any disproof or qualification will ultimately become self-fulfilling. When nuclear weapons are concerned, that form of conservatism is hardly protective.

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Comments on Richard Kaufman's Article

David Holloway[1]

Richard Kaufman has performed a valuable service in setting out so clearly the publicly available evidence for the CIA's estimate that the rate of growth of Soviet defense outlays slowed down after 1976. The secrecy that surrounds important aspects of this estimate makes it difficult for an outsider to pass judgment on the reliability of the figures for production, procurement, and expenditures. One has to assume that the CIA's analysts have taken due account of the various problems, and, in particular, of the factors that might explain the slowdown as the result of something other than a reduction in expenditure. On the face of it, however, there is strong evidence that the rate of growth of defense expenditure declined after 1976, and that expenditure on procurement remained almost stationary.

The CIA interprets the procurement slowdown as the result of causes over which the Soviet leaders have no control, whereas Kaufman is inclined to see it as the result of a deliberate policy choice. He notes that the slowdown casts doubt on the widely held assumption that costs are not a significant factor in Soviet defense policy. He also points out that it undermines the view that the Soviet Union has a dual economy which consists of an efficient, advanced defense sector and an inefficient, backward civilian industry.

It may be helpful to approach these issues from a different perspective, by considering them in the light of Soviet military doctrine. Most Western studies of Soviet procurement policy take military doctrine and strategy, not economic constraints, as the framework of analysis. Many specialists believe that, in the Soviet Union, doctrine guides procurement policy to a much greater degree than it does in the United States, and that consequently Soviet weapons programs can be understood only in that context. This view is not accepted by everyone (see, e.g., Holloway, 1981). Nevertheless, the argument that doctrine and procurement are related suggests at the very least that one should examine Soviet doctrine for evidence that might help to explain the procurement slowdown.

The most significant change in Soviet military doctrine since the early 1970s is the defensive and deterrent rationale that Brezhnev provided for Soviet strategic policy. In a speech in Tula in January 1977, Brezhnev declared that "not a policy aimed at superiority in armaments, but a policy aimed at reducing them, at lessening military confronta-

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tion—that is our policy" (Brezhnev, 1977). In subsequent statements he elaborated on this, claiming that: Soviet strategic forces are intended to prevent an attack on the Soviet Union and its allies, if such an attack is launched, the attacker will receive a "crushing rebuff"; the present strategic relationship with the United States is one of parity, and neither side can outstrip the other in the arms race; the Soviet Union is not striving for superiority, but neither will it allow the United States to gain superiority; nuclear war would be immensely destructive and it would be tantamount to suicide to start one; it is dangerous madness to expect to win a nuclear war.

There is a good deal of disagreement about how to interpret these statements, and many observers have dismissed them as no more than disinformation. But the interesting point here is that the Soviet insistence that parity, rather than superiority, is the goal of Soviet strategic policy fits in with Kaufman's argument that there was a deliberate decision to reduce the investment priority on strategic offensive weapons. This congruence between doctrinal statements and procurement policy suggests that Kaufman is right to question the CIA's argument that the procurement pattern has been more a matter of necessity than of choice, and also tends to reinforce the view that the doctrinal statements are more than mere propaganda.

This new Soviet assessment of the strategic balance coincided with a period of reorganization of the ground and air forces that seems to point to a determination to achieve the goals of any war in Europe as quickly as possible by conventional arms. This stress on theater forces, and especially on the "conventional option," appears to follow from the Soviet leaders' assessment of the consequences of general nuclear war, and from their apparent belief that nuclear war in Europe would be difficult, if not impossible, to limit (Petersen & Hines, 1983). The emphasis on theater forces also corresponds to the pattern of production and deployment that Kaufman finds in the figures.

I am not arguing here that doctrinal revisions determined the shift in procurement, merely pointing to the fact that these two developments coincided. There has been a tendency in studies of Soviet military policy to treat doctrinal and economic factors separately. Economists have looked at Soviet military outlays but paid little attention to other aspects of military policy. Students of Soviet military policy, on the other hand, have ignored economic factors and concentrated on explaining that policy in terms of doctrine and strategy. Yet doctrine and economics are not mutually exclusive. In Soviet eyes, a state's military doctrine (defined as its views on "the essence, purposes and character of a possible future war, on the preparation of the country and the armed forces for it, and also on the methods of waging it") has to take account of economic and political circumstances (*Voennyi Entsiklopedicheskii Slovar'*, 1983, p. 240). Economic factors can affect defense policy not only through the direct impact of economic shortcomings, or through the inability to assimilate

advanced technologies, but also through a reformulation of doctrine that takes account of the state of the country's economy. This point has been neglected to a surprising degree in discussions of Soviet military policy.

Kaufman argues that the CIA's new estimate casts doubt on the common assumption that the Soviet Union does not take costs into account in its military policy. Other evidence supports this point. The Soviet procurement process, for example, requires that economic analysis be done for the most important decisions. Since the early 1960s a significant Soviet literature on the economics of weapons selection has been published which looks not only at the design of specific systems but also at the use of economic criteria in selecting forces to carry out specific missions (Glichev, 1971; Parkhomenko, 1968; Sarkisian and Minaev, 1972; Solnyshkov, 1973, 1968). This literature argues that sound decisions must be based on economic analysis, in order to achieve security at the lowest possible cost. I do not know whether these studies bear any relation to the way in which decisions are actually made. But although they deal primarily with the economic use of resources within the budget, these studies may be symptomatic of a growing concern about the overall size of the budget.

Economic factors have always played a role in Soviet defense policy: The interesting question is whether their role has changed. Even in the Stalin period the existence of economic constraints was recognized, but the priority given to military power led to a policy of trying to minimize those constraints. Until recently it seemed as though defense still enjoyed the highest priority of all, but the evidence of the procurement slowdown suggests that the goals of economic policy have now become more complex. One Soviet economist, writing in 1981, put the point rather obliquely:

> at all stages of the development of our state the interests of strengthening the defense capability of the country have been taken into account in the Party's economic policy. With the construction of developed socialism and the attainment of modern scales of economic might, *more favorable conditions have been formed for the harmonious combination of the interests* of raising the welfare of the people, the further development of the economy and strengthening of the country's military-economic potential (Pozharov, 1981, p. 120) (emphasis added).

Brezhnev seemed to make the same point in his speech to military leaders on October 27, 1982, when he spoke of the importance of industrial development at home, and of the "exceptional significance" of the Food Program (Brezhnev, 1982).

If Soviet priorities have become more complex, so, it seems, has the relationship between the defense sector and the rest of the economy.

Kaufman rightly notes that one of the explanations offered by the CIA for the slowdown in procurement—viz., raw materials, energy and transportation bottlenecks—argues against the idea that the Soviet leaders can insulate the defense sector from the economy at large and undermines the thesis that the Soviet Union has a dual economy. In the Stalin period the priority system was designed to protect the defense sector from failings elsewhere in the economy, and it did succeed, to a greater or lesser extent, in doing so. But it could not do this completely. The common idea that in the civilian economy nothing worked, but that in the defense sector everything worked superbly was a misleading extrapolation from a real situation in which defense was treated preferentially. Studies of technological innovation in the defense sector have concluded that military R&D has to be understood in the context of the R&D system as a whole, and that the defense sector, in spite of its special features, should not be seen as wholly separate or isolated from the rest of the economy (see, e.g., Holloway, 1982, 1977).

Here again the interesting question may be that of change: One should ask not only whether the dual economy thesis is wrong, but whether the relationship between the defense sector and civilian industry is changing. Since the 1930s there has been substantial production of civilian goods in military plants, and military production in civilian plants. There are indications that defense plants have been increasingly used for the production of civilian goods in the 1970s, and that organiational arrangements for managing R&D are being transferred from the defense sector to civilian industry.[2] If this is so, then our understanding of the relationship between the defense sector and civilian industry might have to change. For example, if it is true that more civilian goods are being produced in defense sector plants, expanded floorspace in those plants cannot be used as an indicator of increased military production. More generally, however, it is not clear whether a greater integration of the defense and civilian sectors would lead to a levelling of priorities, or leave the military in a stronger position to defend their high priority.

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DIA's Comments on Richard Kaufman's Article

In his article, "Causes of the Slowdown in Soviet Defense," Richard Kaufman suggests that an explanation can be found in a change in Soviet military investment priorities deemphasizing strategic offensive weapons.

Question. Does the DIA assess a change in Soviet defense investment priorities deemphasizing strategic offensive weapons?

Answer. In the referenced article by Richard Kaufman, the author suggests that the Soviets made conscious policy decisions to deemphasize strategic offensive weapons in the late 1970's and early 1980's. DIA does not agree that the trends in production, deployment, and procurement reflect a specific policy of deemphasizing these weapons. Rather, since the mid-1970's, and as a result of cyclical developments, there has been some stability in the procurement of strategic offensive systems. As the Soviets completed the deployment of their older strategic weapon systems, the production rates declined. Concomitantly, new families of strategic systems were being developed and are now, in the mid-1980's, entering series production and deployment. This is very much like the experience of the 1968-72 period prior to the introduction of several new strategic systems. Further, it is noteworthy that since 1976 the cost of R&D has continued to grow rapidly and Soviet industrial facilities to produce all types of military systems have been expanded. These factors, plus the absence of any direct evidence, militate against any judgment that the Soviets made a clear policy decision to deemphasize their strategic offensive forces.

CIA AND DIA ESTIMATES OF MILITARY BURDEN

Senator Proxmire. Now, as I said, your conclusions about the trends of Soviet defense spending deviate sharply from those of the CIA. For example, you conclude that the Soviet military burden increased from 12 to 14 percent in 1970 to 14 to 16 percent in 1981, and it is now 15 to 17 percent. That is a very, very big, sharp increase, especially in the latter part, in only a few years. The CIA view is that military burden is 13 to 14 percent, not 15 to 17 percent, and it has been roughly constant since 1965. How do you explain that disparity and why do you think your view is the correct one?

General Bissell. The methodology that we use is based on, as I mentioned, Soviet statistics as well as——

Senator Proxmire. Speak a little louder.

General Bissell. The methodology we use is based on the Soviet statistics, as well as our own intelligence methods. We have also, as

I mentioned earlier, seen a large impact of increasingly complex weapons systems in the overall level of effort. This is the major reason why we think that we see a growth in the investment that they are making. It is in the procurement accounts.

Senator PROXMIRE. Let me ask, before you give additional comment, have you discussed this disparity with the CIA. It seems to me this is an extraordinarily important difference of opinion. We have great respect for your organization of course and also for the Central Intelligence Agency. When we have our two sources of information disagreeing, it is hard for us to reach a conclusion. We don't want to just split the difference. That would be obviously wrong. We don't want to make a decision based on some kind of preconviction we might have. We want to get to the truth as much as we can. Why do you differ?

General BISSELL. We work very closely with the CIA. Mr. Gates sends me copies of all the information they have. Our analysts——

Senator PROXMIRE. Did you discuss this particular difference——

General BISSELL. We send our statements and information out to Mr. Gates, who also appeared here. So we are in very close contact on this particular matter. And we work very hard to see if we can reconcile our differences. Basically they have a different approach and methodology than we do. Our measures of these costs, particularly in the ruble cost, gives us a higher percentage than they have arrived at.

Senator PROXMIRE. It is my understanding you didn't send your statement to the CIA until yesterday; is that right?

General BISSELL. It went out late last week, sir.

Senator PROXMIRE. Late last week?

General BISSELL. Yes, sir.

Senator PROXMIRE. In view of the fact this is one of the most difficult problems for the committee, or the Congress generally, I presume, why can't you, in your statement, try to reconcile these differences?

Mr. WEINSTEIN. If I could add to what has been said.

The CIA estimate of the share of resources devoted to the Soviet military is done in constant ruble terms based on 1970. Our view is that in order to most accurately capture what that share is today, currently, the use of current rubles is the best measure—not a constant price series. And that difference leads to the differences in the percentages estimated between CIA and DIA.

DEFINITION OF DEFENSE

Senator PROXMIRE. Well, if you would like to supplement that for the record, that would be helpful. General, isn't it correct your estimate of Soviet defense spending in current prices is based on the assumption that defense has absorbed a constant share of the State budget since 1970, and isn't it also correct that the spending levels derived from this approach are based on the Soviet concept of defense, which is probably broader than the U.S. concept?

General BISSELL. On your first question, that is a fair statement, but our estimates are also based on other data. Regarding your second question, yes, our estimates are based on the Soviet concepts.

Senator PROXMIRE. Doesn't this mean that when you estimate the Soviet military burden, you are doing so with a broader definition of defense than used to estimate the U.S. military burden.

General BISSELL. Yes, sir. Our Soviet estimate in rubles is more inclusive than the estimate of the United States military burden.

Senator PROXMIRE. Now, for example, would you agree that the Soviet definition of defense includes activities such as the civilian space program?

General BISSELL. Yes, sir.

Senator PROXMIRE. Military construction and railroad troops?

General BISSELL. Yes, sir.

Senator PROXMIRE. The internal security forces of the KGB and the MV D?

General BISSELL. Yes, sir.

Senator PROXMIRE. As the U.S. concept of defense doesn't include such activities, isn't a comparison of the United States and Soviet burdens like comparing apples and oranges?

General BISSELL. Well, in that our concept of defense is different from theirs, that is correct. But normally those things have not been included in the overall CIA estimate. And if we are to measure the Soviets' commitment to their military from their perspective rather than from ours, then we should consider all those activities which the Soviets—not the United States—include as "military."

Senator PROXMIRE. So you are using different definitions.

General BISSELL. Yes, sir.

Senator PROXMIRE. OK.

Now, if you broadened the definition of defense for the United States to include what is contained in the Soviet Union's definition, wouldn't the U.S. military burden be increased?

General BISSELL. Yes, sir, I am sure it would, although I believe it would not increase by as much as the Soviets' because of the many activities they consider as military for which the United States has no comparable activities.

Senator PROXMIRE. Mr. Kaufman.

Mr. KAUFMAN. General, have you estimated what the trend and what the military burden currently would be for the Soviet Union if you used the same definition of defense in measuring their military burden as is used in measuring the U.S. military burden?

General BISSELL. Well, we have not done that. We are really not equipped to do that. As you know, we focus primarily in DIA on a costing about 200 weapon systems, and all the other estimating that is done, which includes the parameters we have just gone through, are done by the CIA within their concept and definition of the defense effort. So we really are not structured to do that.

Mr. KAUFMAN. The U.S. military burden is currently estimated at about 7 percent. When you cite a range of 15 to 17 percent for the Soviet military burden and you use a broader definition for defense in measuring the Soviet military burden than is used on the United States side, doesn't that exaggerate the disparity and make the Soviet military burden look greater than it is relative to the United States military burden?

General BISSELL. I presume that is the case. However, let me hasten to say that when we try to make these estimates of what

their expenditures are, we are not really trying to compare the Soviet military budget and expenditures with the United States burden. What we are really trying to do is forecast what we think the Soviet leaders are prepared to invest in the military sector.

Senator PROXMIRE. That is a very helpful distinction. But you can understand how easy it is for those of us in Congress who don't deal with this every day to say, look, we have an economy almost twice as big as theirs, their GNP is 55 percent of ours, then we make a little calculation, and obviously they are 15 to 17 percent, we are around 7 percent, it appears they spend more. But that doesn't follow, because our definitions are different on what military spending is, is that correct?

General BISSELL. That is correct, but of course the estimates of the share of resources committed to the military are not intended as comparative spending estimates.

DOLLAR COST ESTIMATES

Senator PROXMIRE. I would like to ask about the dollar estimates of Soviet defense spending. I take it that you agree with the CIA that measured in dollars, annual Soviet defense growth slowed from a 4-percent rate in 1970–76 to 2 percent between 1976 and 1982; is that correct?

General BISSELL. We generally agree with the Soviet dollar estimates of the total.

Senator PROXMIRE. For that period. You also agree that the dollar cost of procurement grew little, if at all, between 1976 and 1982, which is the CIA conclusion?

General BISSELL. Yes, sir.

Senator PROXMIRE. This past June, you concluded in a preliminary report there was a slight upturn in the Soviet procurement dollar cost in 1982. The CIA concludes that the procurement remained flat in 1982. How much do you conclude it increased in that year?

General BISSELL. For 1983, the range was between 5 and 8 percent.

Senator PROXMIRE. I am talking about 1982.

General BISSELL. For 1982——

Mr. WEINSTEIN. In 1982, we saw about a [security deletion] percent increase.

Senator PROXMIRE. OK.

Mr. WEINSTEIN. We would have to give you an exact figure later.

Senator PROXMIRE. Would you do that for the record?

[The following information was subsequently supplied for the record:]

The CIA dollar cost estimate of procurement indicated a [security deletion] percent increase in 1982 over 1981.

Senator PROXMIRE. In June you also said that your preliminary dollar cost procurement estimate for 1983 showed an increase of 5 to 10 percent over 1982. This morning you said the increase was 5 to 8 percent for 1983 over 1982. Does that mean you have trimmed back the upper end of the range in your estimate?

General BISSELL. Mr. Weinstein.

Mr. WEINSTEIN. The reason why that has come down slightly is that we have been able to refine some of the production data to differentiate between series production of new weapons and production that was still prototype. For 1984, 1983 and the preceding years, we have taken out some systems which we believe have not yet entered series production. This primarily involves a [security deletion] systems. By deleting those systems, the range drops from 5 to 10 percent to 5 to 8 percent. But there has been essentially very little change in any of the other components of our procurement estimate.

CIA AND DIA DOLLAR COST ESTIMATES

Senator PROXMIRE. Nevertheless you said the increase was 5 to 8 percent in 1983 over 1982. Now, in November, only 2 months ago, CIA told us that Soviet dollar procurement cost increased in 1983 by 2 to 3 percent. In other words, not 5 to 6 percent, but 2 to 3 percent. There is an enormous difference there, by far the biggest difference in all the 11 years we have had these hearings.

How do you explain the very large disparity in the CIA's and your estimates for 1983?

General BISSELL. The principal difference is in the quantity being produced, not in the cost of production, on which we agree. The cost of the major system production is not in question. It is a matter of how many have been produced.

Senator PROXMIRE. Why is there this difference. You agree on methodology. You simply disagree on the quantity, is that correct?

General BISSELL. That is correct.

Senator PROXMIRE. What makes you feel that the CIA is wrong?

Mr. WEINSTEIN. We have a large staff that is devoted specifically and exclusively to following the production of major weapons systems for the Soviet Union as well as a number of other countries. These people follow [security deletion] on a day-to-day basis.

Senator PROXMIRE. Could we be specific on this. What weapons are you talking about.

Mr. CRAWFORD. We are talking about the major weapons systems of the Soviet Union—about 200 different systems, sir. I represent a branch that is organized precisely to do nothing else but estimate the quantities of weapons produced and follow [security deletion]. This is our sole or our major mission in the intelligence field. As such, we operate a single point——

Senator PROXMIRE. Beg your pardon. What branch is this?

Mr. CRAWFORD. The Military Materiel Production Branch. I am the Chief of that branch.

This is our major mission. It is not so much a case of who is right and who is wrong; in many cases the differences stem from honest analytical differences. In the past year, DIA and CIA have been attempting to resolve these points, and have had some success. In other cases there are divergences because of disparities in approach to the problem or philosophical questions such as at what [security deletion].

Mr. QUAM. If I could, one instance is the [security deletion] capability that is constantly a point of issue. We hold that there is a

[security deletion] capability. CIA holds the [security deletion] capability to be more limited than does DIA. Therefore——

Senator SYMMS. [Security deletion.]

Mr. QUAM. [Security deletion] strategic missiles.

General BISSELL. Strategic intercontinental ballistic missiles.

Senator SYMMS. Which ones would that be?

Mr. QUAM. [Security deletion.]

Senator SYMMS. In view of the recent Soviet test, where they fired six SS–20's over the polar cap, aren't they reclassified now as intercontinental?

Mr. QUAM. We have not reclassified them, no, sir.

Senator SYMMS. You don't think they are.

General BISSELL. No, sir. They are still being carried as intermediate range ballistic missiles. They are not in the ICBM——

Senator SYMMS. The intermediate range?

General BISSELL. Yes, sir, the SS–20's are. But this can be a very significant factor. We have got this information from [security deletion] that can drive your cost factors up. Other factors that also can influence this is the rate at which major ships will be completed. A change of a year or two in the completion rate of a major ship will change the cost factors considerably. Also the number of [security deletion] that are being produced right now is an area where we have differences in terms of the numbers. Not the cost of the systems, but the numbers that will be produced.

Senator PROXMIRE. Mr. Kaufman has a couple of questions on this point.

Mr. KAUFMAN. General, in order to explain this disparity from 2- to 3-percent range as CIA estimates to 5- to 8-percent growth in your estimates, there would have to be an enormous difference in quantities of weapons. You are estimating a growth rate of from two-and-a-half to four times as high as the growth rate in weapons procurement that the CIA is estimating.

Can you indicate, other than in the refire capability, where the differences, the major differences in the quantities of weapons occur or are they across the board?

General BISSELL. I mentioned a few areas.

Mr. CRAWFORD. We don't have the latest CIA figures yet to compare them on a system by system basis. Basically what we are seeing is we have, as the general said, a difference in ICBM's. We have minor differences, but very costly differences, in the number and types of ships being produced for the Soviet Union. We have, based on analytical judgments, a number of almost random differences in the number of items produced in the ground force sector.

And the same kind of differences exist in [security deletion]. On other items, such as the Backfire bomber, we are in 100-percent agreement.

Senator PROXMIRE. Could you give us a breakdown of all these differences?

Mr. CRAWFORD. Yes.

Senator PROXMIRE. Senator Symms.

Senator SYMMS. Thank you very much.

MILITARY BURDEN

Gentlemen, I appreciate your testimony this morning. I wanted to just clarify for my own edification about the GNP numbers of the Soviet Union. Our GNP is not quite twice as big as their GNP, is that correct?

Senator PROXMIRE. The latest figures I have seen are 55 percent.

Mr. WEINSTEIN. We accept those numbers. It is CIA that does the dollar estimate of GNP. We don't do that. So we simply accept the CIA estimates, yes.

Senator SYMMS. $3 trillion for the United States; $1.6 trillion for the Soviet Union. Do we agree on that? We are talking about if they are spending 14 percent, are you saying?

General BISSELL. We are saying 15 to 17 percent.

Senator SYMMS. Fifteen to seventeen percent. So in terms of dollars, how many dollars is it?

Mr. QUAM. That doesn't translate.

COMPOSITION OF SPENDING

Senator SYMMS. How many men or people are in the Armed Forces of the Soviet Union? What is the personnel posture compared to the United States?

Mr. QUAM. We would have to take that for the record.

General BISSELL. Basically, the figures are about 5 million, I think.

Mr. SYMMS. But we spend about 50 percent approximately of our military budget for personnel cost?

General BISSELL. That is right.

Senator SYMMS. What is their cost?

General BISSELL. In rubles?

Mr. WEINSTEIN. In ruble terms, about 10 to 15 percent.

Senator SYMMS. In terms of equipment, they are spending more money on equipment than we are?

General BISSELL. That is correct.

Senator SYMMS. In research and development—you had an estimate there. I wanted to ask a question about comparing—so they are spending how much more on equipment than we are spending on procurement?

General BISSELL. Sorry, I don't have a lot of comparable data, but I can take your questions.

Senator SYMMS. What I would like to have—what I am trying to get at is, even though there is discrepancy between what your analysis and what the CIA's is, and yours may look the highest of the two—it is the highest of the two—between the CIA vis-a-vis the DIA—but in terms of actual procurement of weapons, where they have a lower personnel cost, the discrepancy between what we spend and what the Soviets spend is even greater than it may appear here on the surface.

General BISSELL. That is logically the case as perceived——

Senator SYMMS. What is that?

General BISSELL. I say that is the case.

SS–18 MISSILE

Senator SYMMS. On the SS–18, where they have 308 SS–18's, it was my understanding that those had [security deletion] warheads. You have they are MIRV'd at six to eight. Wait a minute. You have the naval systems SS–18. That is different than the land based SS–18.

General BISSELL. I think when there were estimates originally, that indicated they may have had a capability for having [security deletion] warheads on there, but we have never seen anything [security deletion]. I think we have revised those estimates [security deletion], sir.

R&D

Senator SYMMS. It is my understanding that they actually have 14 on a lot of them now, but that is a violation of the agreement that they said they would respect with the SALT II agreement. It is not actually technically a violation. It is just they are breaking an agreement that they said they would agree to.

General BISSELL. I am advised we don't have anything that would verify the [security deletion], sir.

Senator SYMMS. Well, the other question I wanted to ask, I don't know whether Senator Proxmire got into this, but you said more than 800,000 full-time equivalent scientists and engineers are engaged in R&D. Overall it is estimated [security deletion] are involved in military R&D, with the total military R&D manpower growing at around 4 percent per year. How does that compare with us?

General BISSELL. I don't know, sir. We will take the question. We are really——

Senator SYMMS. Maybe it is not relevant in terms of—we get a spinoff of our technology from other things. It would work both ways in and out of the military. I was kind of curious how much of a commitment they are making. Are you counting their space program in that?

General BISSELL. Yes, sir.

SPACE PROGRAM

Senator SYMMS. Is it true they view their space program as a military program?

General BISSELL. Yes, sir. About 70 percent is devoted exclusively to space and another 20 percent of that has military application. About 90 percent of their space program is directed toward military purposes.

Senator SYMMS. Thank you very much.

Thank you, Senator.

Senator PROXMIRE. Thank you.

SCIENTISTS AND ENGINEERS

When you referred to that 800,000 scientists and engineers, and the 1,800,000 personnel involved, you recall years ago that we find that the Soviets seemed to call everybody an engineer, where we would call them a technician or a worker or whatever, and that it

is very hard to have a comparison that makes any sense because their categories are so different from ours; is that right?

Mr. WEINSTEIN. That is very true, Senator. In this case, the 800,000 figure refers to those who are graduates, who hold scientific and engineering degrees, not just called engineers but actually hold the equivalent of at least a bachelor's degree in one of the sciences. Many of [security deletion] are the technicians that may be referred to as engineers, but we don't classify them as full-time scientists.

Senator PROXMIRE. I don't want to get into too much of that. I just wonder if their degrees are equivalent to what we get in a good technical school or if they are equivalent to what a B.S. would get in this country.

Let me proceed.

DOLLAR COST ESTIMATES: MARGINS OF ERROR

You say in your statement that the annual growth rates of the dollar cost should be considered as being plus or minus a couple of percentage points. Does that mean your estimate for 1983 and 1984 of 5 to 8 percent growth can be as low as 3 percent or as high as 10 percent?

General BISSELL. I think that is fair.

Senator PROXMIRE. Doesn't that mean you believe there is a margin of error of 40 percent on the low end of the range and 25 percent on the high end?

General BISSELL. I think it could be, but I am not sure that we have looked at it exactly as having that import. In our estimates, it doesn't translate that way because the 5- to 8-percent range already takes account of uncertainties in the estimating process.

Senator PROXMIRE. The CIA says the margin of error for its dollar cost estimates is about 10 percent. Do you agree with the CIA's estimate margin of error?

General BISSELL. We think that it could be a little bit higher because of the factors that we felt were left out of the equation in calculating the definition of defense. Basically, we worked with CIA's figures because that is their area of responsibility. We accept the figures that they develop.

Senator PROXMIRE. In discussing the uncertainty in the dollar estimates, you say very small items of equipment are not easily accounted for and may not even be estimated directly. The large items of equipment make up the bulk of procurement and the CIA has high confidence in those estimates. Are you implying that the estimated rates of growth for total procurement could be or are being significantly misestimated for very small items of equipment and if so, how much?

Mr. QUAM. No. It is just a figure to show you that there are certain uncertainties within the estimate and no quantatative measures are applied.

Mr. WEINSTEIN. If I could adjust one thing on that. The major weapon systems, that is the big aircraft, ships, et cetera, account for probably 75 to 80 percent of the total procurement, if not more. The smaller items are a relatively small share of procurement and are not a major factor in driving growth rates.

LAGS IN MANUFACTURING TECHNIQUES

Senator PROXMIRE. You say that the dollar cost may not adequately reflect the Soviet difficulties in bringing into production an entirely new system with new manufacturing technology with which the Soviets have no experience. Are you saying that when a U.S. manufacturer is asked to estimate the cost of producing what is to the Soviets an entirely new system, the manufacturer is not asked to include in the estimates the cost of incorporating new technology and the CIA makes no or inadequate allowances for that factor?

Mr. QUAM. I don't think that is correct. It is a matter of how the industry goes about looking at that piece of equipment. Many of the technologies that we use routinely are not factored in because they are lost in the noise.

What we are saying is that a new system coming on line that is at the cutting edge of their technology may be several years older in terms of our manufacturing techniques. This cost is not factored in because it is not a big item in our calculations.

Senator PROXMIRE. Does it ever work the other way? I know all of us recognize that our technology is ahead of the Soviets, but not always, and not in every respect. In some cases, they are probably ahead of us. So it would work the other way, too, sometime?

Mr. QUAM. It is possible. Such as the titanium fabrication issue, which caught us, and in which they are still ahead of us.

Senator PROXMIRE. As the program of contracting with U.S. manufacturers to estimate the costs of producing Soviet weapons is jointly funded by the DIA and CIA, why doesn't the DIA see to it that the costs of manufacturing new technology are actually taken into account?

General BISSELL. Generally we provide the funds to the CIA, who then makes the contracts and manages the program. We certainly influence how this is done to a degree.

Senator PROXMIRE. But it is your money. It seems to me you are in a position to say "look, you are ignoring this factor, why don't you take this into account?"

Mr. QUAM. We have been in discussions with the CIA on this issue and are continuing to do it.

Senator PROXMIRE. They understand your differences?

Mr. QUAM. Yes, sir.

Senator PROXMIRE. I hope you press it. I think you have a very good point.

PRELIMINARY DOLLAR COST ESTIMATE FOR 1984

General Bissell, it takes the CIA months to complete its cost estimates of Soviet defense for the previous year. In 1984 it took until November for us to get the CIA estimates of the 1983 Soviet defense costs. I assume it will be some time before the CIA has completed its estimates for 1984. Here it is only January 15 and you already have a preliminary estimate for 1984. You are much quicker than those fellows over there. How do you explain that?

General BISSELL. Just put the emphasis on the preliminary nature of our estimates.

Senator PROXMIRE. Subject to revision. Kind of a flash estimate?

Mr. WEINSTEIN. To amplify a little bit, we are only doing a very small part of the total military program. We are costing the major weapons systems. CIA spends a lot of time costing the entire military program, which includes much more, and in many cases poses many more difficulties than costing these major weapons systems. Hence, it takes a much longer period of time.

Senator PROXMIRE. Senator Symms.

LOOK-DOWN, SEE-DOWN CAPABILITY

Senator SYMMS. I just have one question, General, I want to ask. Then I have another meeting to attend.

You mentioned they have now developed a look-down/see-down capability, and are building it into their latest fighter aircraft, and that might have been one of your reasons you thought they slowed up production slight, to get that technology. Does that give them the same head-on missile capability that our AIM-9 would have?

General BISSELL. Comparable.

Senator SYMMS. In other words, they don't have to get behind——

General BISSELL. No, sir, it is an all-aspect type of weapon system.

Senator SYMMS. Does the missile shoot out and come back or just hit it head on?

General BISSELL. I think most of them would shoot into a forward quadrant. But one of our aircraft would be head on or tail——

Senator SYMMS. If that is the case, then our ability with fewer numbers to maintain air superiority, could be dramatically changed from the way it has been say with the Israelis versus the Syrians, where they dominated the fight with head-on AIM-9 shots.

General BISSELL. Our advantage in this area is being eroded by the increasing capability; yes, sir.

Senator SYMMS. In other words, more fighters may make an enormous difference in the outcome of who maintains air superiority?

General BISSELL. Yes, sir.

Senator SYMMS. Thank you very much, Senator Proxmire. I will excuse myself.

Senator PROXMIRE. Thank you, Senator Symms. It is good to have you here.

DOLLAR COST ESTIMATES FOR MOST RECENT YEAR

General Bissell, isn't it correct that the dollar estimates for the most recent year contain projections for the most recent deliveries and deployments because of an unknown amount of incomplete production, and isn't it correct in recent years the CIA has revised downward previous year's estimates because the projections were too high?

Mr. WEINSTEIN. The second part first. Yes, that is true, CIA has revised their estimates downward in past years. I believe this past year they relooked at their approaches, and have much higher confidence in them. But I really would not speak beyond that for CIA.

Senator PROXMIRE. They take more time, much more time than you do. Then they have to have a revision, and you folks come out in just a few days after the year is over with your estimates. So it seems to me we should have somewhat less confidence in your estimates, although I don't want to be critical.

Mr. QUAM. One thing is that they are estimating the entire military program. We are estimating 200 weapon systems which form 50 percent of the procurement weapons.

Senator PROXMIRE. What percent?

Mr. WEINSTEIN. It is between two-thirds and three-fourths of the total procurement.

Senator PROXMIRE. One-half to three-fourths——

Mr. WEINSTEIN. Two-thirds to three-fourths.

Senator PROXMIRE. You say they estimate the entire military cost?

Mr. WEINSTEIN. That is correct.

Senator PROXMIRE. How much is procurement of their total cost? Your estimates are one-half to three-fourths of procurement. Procurement is what, one-third?

Mr. WEINSTEIN. In dollar terms, about one-fourth of the total military program.

Senator PROXMIRE. So you estimate about 20—15 to 20 percent?

Mr. WEINSTEIN. Yes, sir. We can do this so quickly in the beginning of the year because of what Mr. Crawford said earlier, that we have a dedicated staff of analysts following the production of these major weapon systems throughout the entire year. Our analysts are constantly making, revising, and refining estimates, so that by the end of the year we can develop some preliminary figures. The estimates are early and preliminary, and there will no doubt be some revision and refinement as further information becomes available through the course of the year.

Senator PROXMIRE. Does the CIA have any opportunity to comment on your estimates before they are released or do you just go right ahead and release them?

General BISSELL. Generally—and I will let our experts who do it daily amplify—we work with them on a regular basis. In many cases there are differences in methodologies, so the estimates provided to them are for their information. But they are aware of our differences all along.

Mr. WEINSTEIN. That is correct. We have spent a great deal of time with them, particularly on the question of differences of estimates of quantities of weapon systems in an attempt to isolate where some of our differences are and why they are. As has been pointed out earlier, in many cases we have some very honest analytical differences with respect to numbers and systems. In some cases, we can work together and resolve these differences. In other cases, we are not able to.

Senator PROXMIRE. You see, that is another reason why the point made by Mr. Kaufman earlier is so significant. If you estimate, say, 200 weapons systems that constitute one-fourth of the procurement which in turn constitutes—one-half of the procurement, or one-half to three-fourths, which in turn constitutes about one-fourth of the total military spending, and then on that basis say they have increased overall military spending by between 5 and 8 percent com-

pared to the CIA's 2 percent, it seems to me that you would have to have a terrific change in their procurement for those weapons systems to justify that.

Mr. WEINSTEIN. That would be true. But we are not imputing a growth rate to the total military program. We are only talking about the growth rate of procurement and the major weapon systems. We are not suggesting that the total military program of the Soviet Union in dollar costs——

Senator PROXMIRE. The procurement is up 5 to 8 percent.

Mr. WEINSTEIN. That is correct. We are not able to address the total.

STRATEGIC ROCKET FORCES

Senator PROXMIRE. In their November testimony we were told by CIA some of the Soviet military services were hit harder by the slowdown in defense growth than others. Total outlays for strategic rocket forces grew by 4 percent per year during 1966 to 1976, but fell by more than 5 percent per year after 1977. Do you agree or disagree?

Mr. WEINSTEIN. In terms of the costs, we have no comparable data ourselves, so we accept those figures.

Mr. CRAWFORD. We do not break out things by mission or function or roles in our costing program. However, in the case you cite, because of the [security deletion] I would say that the supposition probably is correct.

STRATEGIC OFFENSIVE WEAPONS

Senator PROXMIRE. An examination of the data on Soviet production and deployment of weapons shows strategic offensive weapons were produced and deployed at slower rates than expected by U.S. intelligence experts. These slower rates seem to be consistent with the CIA finding that outlays for strategic rocket forces declined after 1977. Do you agree or disagree?

Mr. CRAWFORD. Yes, procurement outlays declined.

Senator PROXMIRE. John Steinbruner of Brookings Institution has written in the Soviet Economy that following the SALT I agreement no Soviet missiles replaced weapons that had not reached the end of their design life, and that this approach to substitution was not characteristic of previous Soviet practices. In addition, the process of substitution occurred at a rate significantly slower than the surge of the previous decade and on a scale significantly below what the SALT I agreement would have allowed.

Do you agree or disagree?

General BISSELL. I would have to look at that in the total context. But I think the general view we present about the problems of technology would be parallel to what we are saying about the difficulties of adapting, developing, and bringing new technology on line.

Mr. QUAM. I would like to look at it in full context.

Senator PROXMIRE. Go right ahead.

Mr. QUAM. I would rather look at it in the full context and comment for the record.

[The following information was subsequently supplied for the record:]

Under the SALT I Interim Agreement, the Soviets could complete launchers under construction, as well as modernize and replace systems. The SS-9's and SS-11's, the systems being replaced, were the products of technology developed during the 1950's and 1960's and had been deployed since at least [security deletion]. The newer, fourth-generation SS-17's, SS-18's, and SS-19's began replacing the SS-9's and SS-11's in [security deletion] and incorporated significant improvements [security deletion] and overall increased survivability of the new systems.

The rate of substitution was slower than the surge of ICBM deployments in the 1960's. However, the deployments of the new ICBM's (SS-17, SS-18, and SS-19) involved the extensive upgrading of the launchers for the new ICBM systems. Additional time was required for the conversion, retrofit, and modernization programs that involved the SS-17, SS-18, and SS-19, as well as the SS-11 and SS-13. The total number of launchers may have dropped [security deletion]. However, the RV totals increased [security deletion].

Senator PROXMIRE. Mr. Steinbruner points out the Soviet modernization program in the seventies remained well below what the SALT II agreement would allow but their advanced missiles are deployed at levels that are from 46 to 65 percent below the applicable SALT II ceilings. Do you agree or disagree?

General BISSELL. If we could make those for the record.

[The following information was subsequently supplied for the record:]

In [security deletion], the Soviets had 308 SS-18's deployed with [security deletion] percent [security deletion]. The SS-19 was deployed at 359 launchers with [security deletion] percent [security deletion]. The SALT II limits are 308 SS-18's and 360 SS-19's.

Senator PROXMIRE. Let me ask one more question; perhaps you would want to answer this a little later, too. Mr. Steinbruner also concludes that in terms of total missile warheads, Soviet strategic offense forces, as of mid-1984, have between 50 and 60 percent of their allowed capacity. Can you make a judgment on that?

General BISSELL. We will answer that for the record.

[The following information was subsequently supplied for the record:]

In terms of total missile warheads deployed, the present Soviet ICBM force of 1,398 launchers has an estimated [security deletion] out of a possible maximum capacity of [security deletion] percent capacity.

Senator PROXMIRE. It is a little difficult for me to understand how Mr. Steinbruner could make this kind of judgment and you folks who have this responsibility don't seem to be able to make it.

General BISSELL. Well, I think we are prepared to address the question. I just don't know of anybody here who has sat and looked at the total capacity versus the number of warheads and converted those figures to percentages.

Senator PROXMIRE. Now, it seems to me the CIA finding that the outlays for the strategic rocket forces declined and Mr. Steinbruner's conclusion about the deployment of missiles and warheads are consistent with the conclusion that during the period when Soviet procurement growth was slowing down there was some emphasis in slowing the strategic forces. Can you comment on that?

Mr. CRAWFORD. If I may make a short comment. This has to do with technology, too. Possibly procurement for the strategic forces did slow down, as I think we have acknowledged here. However, this doesn't mean they have not gone ahead with research and development to support those forces at a later date. For example, we are getting for the first time [security deletion] coming on line.

Senator PROXMIRE. That is very possible. That is a different kind of question. We never know what their research and development is likely to be compared to what we know about production and deployment. Isn't that right?

Mr. CRAWFORD. One of the things I think we said today was that there may have been a delay in procurement to accommodate advanced high-technology weapon systems. I think this may well be one aspect of the situation. For instance, we are seeing the BEAR H with the ALCM on it now, which is an entirely new strategic system. They may have done a lot of things in the strategic forces.

REASONS FOR SLOWDOWN IN PROCUREMENT GROWTH RATE

Senator PROXMIRE. General Bissell, in your testimony you said DIA believes that technological reasons are the single best explanation for the slowing in the expansion of procurement during the 1976–82 period. Yet as you point out it was during this period that the Soviets made major advances in new strategic weapons. In addition, it was during this period that they achieved nuclear parity with the United States, and according to some, nuclear superiority. How could they achieve such gains and be suffering from technological problems at the same time?

General BISSELL. To put that into context, sir, what we really mean is that we look at the total range of possible factors that could influence Soviet decisions as to the rate at which to procure and when to start phasing in weapon systems—these decisions being influenced primarily by technological, economic, or purely random factors. It is our judgment that the problems of accommodating new technologies and enhanced war-capable and more sophisticated systems were the cluster of factors that influenced those decisions more than economic or random factors.

Senator PROXMIRE. Now, in their November testimony CIA said that the slowdown of military procurement has lasted too long to be the result exclusively of bottlenecks or technological problems. Do you agree or disagree?

General BISSELL. We tend to have a different view. They place more weight on that aggregation of factors that would be economic, whereas we tend to look at those aggregations of factors that we consider related to technology and the bringing of new technology into their system.

Senator PROXMIRE. CIA concludes that in deciding to hold procurement growth down the Soviet leadership in the mid-seventies may have viewed the external threat as manageable and the existing high level of procurement as enough. Is it possible that there was a decision to slow the strategic forces program?

General Bissell. I think that, looking at the number of units and types of force structure that they built, apart from weapons systems, there may have certainly been a leveling off in the military's view of what the size of conventional forces or nuclear forces may have been required during that period. But we saw nothing to indicate that their overall effort to improve the capabilities and/or to modernize those forces had diminished.

Senator PROXMIRE. While you may discount the possibility that a deliberate decision was made by the Soviets in the mid-seventies to slow down their strategic program, has the possibility been considered within your agency, and has the Defense Department civilian and military leadership been advised of it?

Mr. QUAM. We have been researching it. To date, a clear-cut decision point has not been found. Therefore, to say unequivocally that it was a decision by the leadership to slow it or to level it can't be documented.

Senator PROXMIRE. Mr. Kaufman.

Mr. KAUFMAN. You said that a clear-cut decision point hasn't been identified. Do you mean by that that you have not observed a Soviet leader making such a decision or any other indication from policy deliberations of the Soviet leadership that such a decision was made?

Mr. QUAM. That is basically correct, yes.

Mr. KAUFMAN. Of course it is always very difficult to find out what Soviet decisions are, if we are only trying to interpret what the Soviet decisionmakers say. They normally do not discuss their decisions in public and in other ways that we are able to detect. Isn't that kind of a catch-22 for your agency, that you will not agree that a decision has been made until you observe a Soviet decisionmaker making it, but since you cannot ever observe him making a decision, then we cannot ever come to the conclusion that it was made.

Mr. QUAM. I would disagree with that, and think if we returned to the Senator's original question, of whether there has been research done and if we are looking for that kind of material, the answer is yes. In as far as there being a catch-22 is concerned, I don't agree with that statement.

Mr. WEINSTEIN. Could I just add—we would never see a public announcement of a policy change. But that is not the only source of information we pursue.

I would further add that this is one of the many areas where both we and CIA are in agreement; in all our research, we have not been able to find any evidence of a policy decision relating to procurement.

Mr. KAUFMAN. The thrust of the Senator's line of questions has been that the objective circumstances strongly suggest that such a decision may have been reached. Those objective circumstances include the outlays of the strategic rocket forces, which you agree were diminished during the period of the slowdown. They include the rates of deployment of strategic weapons systems. And they may include other factors that have been discussed today.

What you seem to be saying is that these objective circumstances do not yet weigh enough in your mind to warrant serious consideration as to whether they may add up to a decision.

Mr. WEINSTEIN. What we are saying is that there is no direct evidence. Yes, there is a pattern suggesting that production of ICBM's and spending on ICBM's fell during that time period. However, there was no diminution in the capabilities of the strategic rocket forces or their strategic offensive forces. There were other things going on as well. We have no evidence to point to policy decisions concerning procurement with regard to any branch of the Soviet military.

Mr. KAUFMAN. May I say here that you said there is no evidence of a diminution of capabilities. We are not talking about capabilities; we are talking about resource allocations. We are talking about spending. We are also talking about production and deployments. And what we are saying is that the objective circumstances strongly indicate that a decision was made to slow down the allocation of resources for the strategic forces. We are not talking about the capabilities.

Mr. CRAWFORD. You are saying the procurement sphere. As I pointed out to you a moment ago, it may well have been that a decision was made to allocate more money to strategic rocket forces R&D rather than continue to procure older types of weapons. We are now seeing new weapons come on line. That, if anything, says that there was a decision—I am not going to say this was documented, either—to continue to support those forces at a very high level, but possibly not by the procurement of older, semiobsolescent weapons system.

Mr. KAUFMAN. You may be right, Mr. Crawford. But you do acknowledge that the estimates of R&D are the least reliable of all the estimates made about Soviet military spending.

Mr. CRAWFORD. I am not involved with that estimate.

MARGIN OF ERROR IN RESIDUAL ESTIMATES

Senator PROXMIRE. DIA's public estimates are based on official Soviet financial data, while the dollar estimates are based on actually counting up weapons and other equipment and estimating the cost. For that reason, it is not possible with DIA's reasonable estimates to disaggregate Soviet military spending and, for example, focus on outlays for strategic forces.

General BISSELL. That is correct.

Senator PROXMIRE. What is the margin of error in your residual estimates of Soviet defense, and is it greater or leser than the margin of error in the dollar estimates?

Mr. WEINSTEIN. We try to avoid talking about the absolute levels of the ruble estimates. We are more concerned with the growth

rates of those ruble estimates over time and not over a single year-to-year period. There is a range of uncertainty and error. I could not give you an answer off the top of my head as to what that is right now.

Senator PROXMIRE. In the past, we have been told the residual analysis used to estimate Soviet military procurement has a margin of error of plus or minus one-third. Do you agree, and if not, what is the margin of error in this methodology?

Mr. WEINSTEIN. There are some residual methodologies that do have high rates of error along the order of magnitude that you mentioned, yes. The methodologies we use are similar to but not exclusively, that residual methodology with a plus or a minus one-third error. I find it difficult to say whether it is, for example, 20 percent, 22 percent, or 25 percent error.

AFGHANISTAN

Senator PROXMIRE. Let me get into another area. It seems to me it makes common sense that our own experience in the Vietnam war was that we increased our military spending rapidly. It was a big factor in how much our defense cost. The Soviets are engaged in a somewhat comparable war in Afghanistan. There are differences, of course, as there always are. What is the estimate of how much the war in Afghanistan is costing the Soviets annually? That war began in 1979; it is in its fifth year now. Do you have any estimates of that?

General BISSELL. I am not aware that we have done any estimates.

Mr. WEINSTEIN. We have not. We have accepted CIA's estimates.

Senator PROXMIRE. You see, it occurs to me, here you have a slowdown in a period in which the Soviet Union, at least part of that period the Soviet Union was engaged in a serious war, in which they employed a great deal of their resources and their equipment and their personnel and so forth. There had to be an increase in cost. That was 1979, 1980, 1981, and during that period overall spending flattened out.

Mr. WEINSTEIN. CIA has estimated approximately a billion dollars a year in incremental costs for that. We have accepted that figure.

Senator PROXMIRE. Well, from what I read in the press, U.S. military assistance to the Afghan resistance is in the range of $250 million per year, and there are proposals to increase it to half a billion dollars. At the peak of the Vietnam war we were spending almost $10 to $12 billion. Shouldn't the Soviets be spending at least several billion dollars per year for the level of effort they are mounting in that war, rather than $1 billion? A billion seems pretty small in view of all the reports we get of their military activity.

General BISSELL. I guess we would have to defer to the CIA, who apparently have made some effort at estimating that cost. We have not done so.

Senator PROXMIRE. Well, let me be a little more precise.

Doesn't the fact that the war began during the period of the Soviet military procurement slowdown mean that they have had to draw down weapons from their inventory in order to equip their

forces in Afghanistan and does such a drawdown show up in their deployments anywhere else?

General BISSELL. I think that we have seen the introduction of new model aircraft into this arena. We know about the level of effort, the forces they are maintaining there, somewhere in the neighborhood of between 105,000, 115,000. I think your basic premise that this is a cost factor that has to be brought into their total defense consideration is valid, that it is a significant factor. How much that might be, I am not in a position to say.

Senator PROXMIRE. Mr. Crawford.

Mr. CRAWFORD. I was going to add that they have allocated substantial forces and weaponry to the Afghanistan war. They have used a lot of ammunition. But equipmentwise, procurementwise, the Soviets have not been forced to produce great or significant quantities of new items to replace weapon systems being destroyed. Only in the consumable area have the Soviets had increased costs.

REASONS FOR IMPROVED ECONOMIC PERFORMANCE

Senator PROXMIRE. In your statement, you say 1983 and 1984 marked an upturn in the Soviet economy as a whole. You say that part of the improvement is due to increased productivity of both capital and labor.

What accounts for that improvement? Why they are doing significantly better than U.S. experts expected such a short time ago.

Mr. WEINSTEIN. On the labor side, the labor campaign started by Secretary Andropov which did continue after Chernenko's succession seemed to be one of the major factors. People spend more time at work, less time queued in line waiting for food and things of that sort. And that seemed to have a major impact.

Soviet statistics as well supported that there was a major improvement in labor productivity.

SOVIET STATISTICS

Senator PROXMIRE. In view of the suspicion that all of us have toward economic statistics, including statistics in this country, and in view of the fact that the Soviets would naturally expect a new government to want to come in with statistics that made them look good, don't we have to, if we are going to have a realistic assessment, take a pretty skeptical, cynical look at what is the actual situation rather than what the self-serving statistics show?

Mr. WEINSTEIN. Well, certainly it pays not to accept everything at face value, just because the Soviets say it. But we found, for one thing, that in Soviet statistics there is a certain consistency in that those things which they do not choose to tell us, rather than distort or mask in some way, they simply don't tell us. So what they do publish has some degree of merit and some degree of reliability.

An example, I suppose, is some of the agricultural statistics where agriculture performance took a rather bad turn and the Soviets simply stopped publishing agriculture output data. Also, the labor productivity figures really did not stand in isolation. We saw other data that suggested similar improvements in the economy overall, which tie in with the increased labor productivity.

Senator PROXMIRE. Don't they hide what they don't want to make public and just show the stuff to make them look good? Obviously, you cannot do this for very long.

If a leader stays in office as Brezhnev did for many years, it is much more difficult than if you just come in new and show you are doing a hell of a job. Knowing what some of our own people do—I am not trying to be partisan in this; Democrats do the same thing as Republicans—we also try to do what we can with our statistics.

It seems to me if you are running an outfit like the Soviet Union where you don't have any private sector at all, and everything is government, you would be particularly tempted to cook the books.

Mr. WEINSTEIN. That possibility also exists. Again, what we see, in toto, looking at the entire economy as well as the military economy and industry, are a number of things all generally consistent with the improvements that are shown by the Soviets' statistics.

Senator PROXMIRE. You cite the Economic Experiment initiated 1 year ago, designed to link wages to a manufacturing plant's final performance as having improved morale and productivity. That experiment, as you point out, initially involved only five ministries and a few hundred enterprises. Are you saying this rather small-scale reform had an effect on the entire economy and that it significantly improved performance in 1984?

Mr. WEINSTEIN. No, sir, not at all. We point out that it is an area where the Soviets feel they have made some significant progress and are expanding it.

As we pointed out earlier, in January 1985, the experiment was expanded rather substantially. The effects of that will be a long time in coming. But we think this is one of the kinds of steps that they are taking to try to improve labor productivity.

Senator PROXMIRE. That is so much less than what the Chinese are doing. They have a far greater degree of decentralization, where you can understand how that might make a difference.

All that the Soviets have done really is to tie in wages to the showing of the particular plant; is that right?

Mr. WEINSTEIN. This particular experiment is designed primarily to tie the fulfillment to contracts for actual sales of materials.

Senator PROXMIRE. But it has nothing to do with 1983 and 1984. It didn't go into effect until 1985.

Mr. WEINSTEIN. It started in the beginning of 1984, but on a small scale.

U.S. GRAIN EXPORTS

Senator PROXMIRE. You say the improvement in the food situation helped both in the area of labor productivity and the transportation sector. U.S. grain exports must have contributed to the improvement of the food situation.

You conclude in your statement that the economic upturn allowed for a greater growth in the military sector. Can it be concluded that our grain exports are helping the Soviet military sector?

How do you view trade with the Soviets from a military perspective?

I have been against that resumption of trade—sale of grain.

General BISSELL. We pointed out some of the difficulties. When the Soviet agricultural system has difficulties, their transportation and other systems pay a price even when we provide or sell grain. For example, there are dislocations in transportation as they try to move imported grain from ports to interior distribution centers, rather than the reverse flow. But I would, on sum, have to say their economy benefits when there is a major shortfall, such as a bad agricultural period, and they are able to obtain American imports.

Senator PROXMIRE. So their military sector is actually benefited by our selling grain to the Soviets.

General BISSELL. To some degree; yes, sir.

Senator PROXMIRE. Can you give us any notion of what difference that makes? Is it conceivable if we haven't done that they won't have been able to have the 5 to 8 percent increase or not?

General BISSELL. I don't know——

Senator PROXMIRE. They might not have done it because of the price they would have to pay in other parts of their economy.

Mr. WEINSTEIN. Improvements in rail transport and fewer incidents of disruptions and bottlenecks, for example, most assuredly affected every sector of the economy including the military industry.

But many of these kinds of impacts are very short kinds of things—a delay of 1 day, 1 week, 1 month, perhaps.

TRADE DENIAL

Senator PROXMIRE. Let me ask you a more comprehensive question.

Strictly from a military perspective, would a policy of trade denial or total embargo of trade with the Soviets enhance our military situation?

Mr. QUAM. For the entire Western world or just the United States?

Senator PROXMIRE. No; we can't do anything about that. I wish we could.

But obviously—that is what people say; they can buy from somebody else.

Mr. QUAM. I believe they would supplement from other areas. They would not depend solely on the United States.

Senator PROXMIRE. For instance, what we did 6 years ago or 5 years ago, at the beginning of the Afghanistan war, didn't that have some effect on the foreign exchange? Weren't there slowdowns and strikes in some of their plants, automobile plants, tank plants?

Mr. DAVIS. [Security deletion.]

I am Ron Davis, chief of the Warsaw Pact Economic Section.

CHINESE ECONOMY

Senator PROXMIRE. General Bissell, it was your decision not to include a discussion of the Chinese economy in today's hearing. Can you explain the rationale for that in view of the improving relations between the Soviet Union and China and the fact that China is the world's largest Communist country?

General BISSELL. The policy guidance that has steered this follows the same rationale as the first part of your statement—that the relationship between the United States and China is on a different vector than the somewhat more adversarial relationship we have with the Soviet Union.

Senator PROXMIRE. Of course that has been true for several years.

General BISSELL. Yes; and the sensitivity I think within the administration to linking these is to try to separate the connectivity between what was previously viewed as a Sino-Soviet bloc, although we do recognize——

Senator PROXMIRE. Generally, the situation with China has been dramatically changed since 1972, 1973. It has been more than 10 years, almost all the time we have had these hearings. We have had them together in the past.

CIA treated them together.

General BISSELL. We are prepared to provide information and to appear with you on the subject of China.

Senator PROXMIRE. Where did the policy guidance come from on this?

General BISSELL. This was a policy guidance where we were clearing our material to come to this committee——

Senator PROXMIRE. The Secretary's office?

General BISSELL. International Security Affairs Office.

Senator PROXMIRE. What office?

General BISSELL. International Security Affairs Office of OSD.

SOVIET-CHINESE RELATIONS

Senator PROXMIRE. Do you think the prospects of a Soviet-Chinese rapprochment have been enhanced in the past year or is it your view that such a development is remote?

General BISSELL. I think that there may be very limited accommodation, sir, that has taken place over the past year.

I think they still have very basic conflicts over the Soviet involvement in Afghanistan, support of Vietnam, and their involvement in Kampuchea, as well as the Soviet posture along their border.

Senator PROXMIRE. Would you agree if a major thaw occurs between China and the Soviet Union, or if a political upheaval turns China's Government against us, the present policy of encouraging transfers of advanced technology including military technology to China could turn out to be a disaster for the United States?

General BISSELL. I think that the program of technology transfer has to be done with that policy in mind. It has to be a measured and controlled process.

LYNDON H. LAROUCHE ORGANIZATION

Senator PROXMIRE. Now let me ask in an entirely different area. I hope you can respond to these questions because they disturb many of us.

The Washington Post said officials of the DIA have been in contact with the Lyndon H. LaRouche organization. Given his wild unsupportable charges such as saying Walter Mondale is an agent of

influence of Soviet secret police and the Queen of England is involved in dope dealing, why does DIA lend credibility to his charges by meeting with him?

General BISSELL. Sir, if we have been dealing with LaRouche, I am not sure who has been dealing with him. I saw that article this morning. I cannot——

Senator PROXMIRE. You might want to look that over carefully.

General BISSELL. I will. But I am not aware of any connection we might have with LaRouche.

Senator PROXMIRE. Will you provide whatever information on that you can?

General BISSELL. Yes, sir.

Senator PROXMIRE. What is your position on this? Would it have your approval, if we deal with LaRouche?

General BISSELL. As I say, I just became aware of the allegation of the Post this morning as I looked at the article. I am not saying we totally discount it. I would take anything he might have to say with a grain of salt, because we have quite a few other sources we place a lot more confidence in.

Senator PROXMIRE. It seems to be just, without having gotten into this the way DIA may have—it seems to be almost grossly irresponsible—these wild charges against Henry Kissinger, against the Queen of England, and Walter Mondale. It just doesn't make sense.

The Heritage Foundation claims Mr. LaRouche puts forward issues designed to support Soviet interests. Do you agree, and is it possible that he still remains a Marxist or Trotskyite he once was?

General BISSELL. Sir, he is an unknown to me. I will have to take that one under advisement.

Senator PROXMIRE. Any of you other gentlemen have any comment on that?

Mr. WEINSTEIN. No, sir.

Senator PROXMIRE. Are you concerned about the possibility raised in the Washington Post today that the LaRouche intelligence collection organization may have access to classified U.S. data about our strategic defense initiative?

General BISSELL. I would be concerned of any group that might have access to that, yes, sir—LaRouche or any others, who might have unauthorized access.

Senator PROXMIRE. Whatever information you can give us, we will be very grateful for it.

Now, in past appearances you gave us a breakdown of Soviet military production over the past 5 years. As I noted earlier, this year your production tables cover only 3 years. I just wanted to make sure, and I think you did tell us you would provide for the record an update of the tables you gave us last year, covering the past 5 years.

General BISSELL. Yes, we will do that.

Senator PROXMIRE. Fine.

Thank you very much, gentlemen. You have been extremely responsive and cooperative. We deeply appreciate it.

As I said at the beginning, I do hope you can desanitize these hearings and make them available to us as soon as possible. You made some excellent, very valuable testimony.

General BISSELL. Thank you.

Senator PROXMIRE. The subcommittee will stand adjourned.

[Whereupon, at 12:10 p.m., the subcommittee adjourned, subject to the call of the Chair.]

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COMPARISON OF DIA AND CIA PROCUREMENT NUMBERS, MAY 7, 1985

Weapon class	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Ballistic missiles:											
ICBM's:											
DIA											
CIA											
SLBM's:											
DIA											
CIA											
Other:											
DIA											
CIA											
Strat Def SAM's:											
DIA											
CIA											
Gen purpose SAM's:											
DIA											
CIA											
ASM's and ALCM's:											
DIA											
CIA											
Naval cruise missiles:											
DIA											
CIA											
Tanks:											
DIA											
CIA											
Artillery:											
DIA											
CIA											
Multiple RKT LCHRS:											
DIA											
CIA											
Armored vehicles:											
DIA											

[Security deletion.]

CIA .....

AAA:

DIA .....

CIA .....

Ammunition (100 ST):

DIA .....

CIA .....

Major surface ships:

DIA .....

CIA .....

Minor surface ships:

DIA .....

CIA .....

Strategic submarines:

DIA .....

CIA .....

General purpose submarines:

DIA .....

CIA .....

Fixed-wing aircraft:

DIA .....

CIA .....

Helicopters:

DIA .....

CIA .....

[Security deletion.]